Table of Contents

FS-1750
FS-3750

User's Manual

Kyocera Laser Printer

Caution

NO LIABILITY IS ASSUMED FOR ANY DAMAGE CAUSED BY IMPROPER INSTALLATION.

Notice on Software

SOFTWARE USED WITH THIS PRINTER MUST SUPPORT THE PRINTER'S EMULATION MODE. The printer is factory-set to emulate the PCL 6. The emulation mode can be changed by following the procedures described in *Chapter 2*.

Notice

The information in this manual is subject to change without notification. Additional pages may be inserted in future editions. The user is asked to excuse any technical inaccuracies or typographical errors in the present edition.

No responsibility is assumed if accidents occur while the user is following the instructions in this manual. No responsibility is assumed for defects in the printer's firmware (contents of its read-only memory).

This manual, any copyrightable subject matter sold or provided with or in connection with the sale of the page printer, are protected by copyright. All rights are reserved. Copying or other reproduction of all or part of this manual, any copyrightable subject matter without the prior written consent of Kyocera Corporation is prohibited. Any copies made of all or part of this manual, any copyrightable subject must contain the same copyright notice as the material from which the copying is done.

Regarding Tradenames

PRESCRIBE is a registered trademark of Kyocera Corporation. PRESCRIBE 2e, KPDL, and KIR2 (Kyocera Image Refinement 2)* are trademarks of Kyocera Corporation.

Diablo 630 is a product of Xerox Corporation. IBM Proprinter X24E is a product of International Business Machines Corporation. Epson LQ-850 is a product of Seiko Epson Corporation.

Hewlett-Packard, PCL, and PJL are registered trademarks of Hewlett-Packard Company. Centronics is a trade name of Centronics Data Computer Corp. PostScript is a registered trademark of Adobe Systems Incorporated. Macintosh is a registered trademark of Apple computer, Inc. AppleTalk is a trademark of Apple Computer, Inc. Microsoft, Windows, and MS-DOS are registered trademarks of Microsoft Corporation. PowerPC is a trademark of International Business Machines Corporation. ENERGY STAR is a U.S. registered mark.

This Kyocera page printer uses PeerlessPrintXL to provide the HP LaserJet compatible PCL6 language emulation. PeerlessPrintXL is a trademark of The Peerless Group, Redondo Beach, CA 90278, U.S.A.

This product was developed using the Tornado™ Real Time Operating System and Tools from Wind River Systems.

Contains UFST™ and MicroType® from Agfa Corporation.

*: KIR 2 uses Pixel Magic's resolution enhancement technology.

Pixel Magic Pixel Magic is a trademark of Oak Technology, Inc.

© 1999 by Kyocera Corporation. All rights reserved, Revision 1.4., November 1999

IBM PROGRAM LICENSE AGREEMENT

THE DEVICE YOU HAVE PURCHASED CONTAINS ONE OR MORE SOFTWARE PROGRAMS ("PROGRAMS") WHICH BELONG TO INTERNATIONAL BUSINESS MACHINES CORPORATION ("IBM"). THIS DOCUMENT DEFINES THE TERMS AND CONDITIONS UNDER WHICH THE SOFTWARE IS BEING LICENSED TO YOU BY IBM. IF YOU DO NOT AGREE WITH THE TERMS AND CONDITIONS OF THIS LICENSE, THEN WITHIN 14 DAYS AFTER YOUR ACQUISITION OF THE DEVICE YOU MAY RETURN THE DEVICE FOR A FULL REFUND. IF YOU DO NOT SO RETURN THE DEVICE WITHIN THE 14 DAYS, THEN YOU WILL BE ASSUMED TO HAVE AGREED TO THESE TERMS AND CONDITIONS.

The Programs are licensed not sold. IBM, or the applicable IBM country organization, grants you a license for the Programs only in the country where you acquired the Programs. You obtain no rights other than those granted you under this license.

The term "Programs" means the original and all whole or partial copies of it, including modified copies or portions merged into other programs. IBM retains title to the Programs. IBM owns, or has licensed from the owner, copyrights in the Programs.

1. License

Under this license, you may use the Programs only with the device on which they are installed and transfer possession of the Programs and the device to another party.

If you transfer the Programs, you must transfer a copy of this license and any other documentation to the other party. Your license is then terminated. The other party agrees to these terms and conditions by its first use of the Program.

You may not:

1) use, copy, modify, merge, or transfer copies of the Program except as provided in this license;
2) reverse assemble or reverse compile the Program; or
3) sublicense, rent, lease, or assign the Program.

2. Limited Warranty

The Programs are provided "AS IS."

THERE ARE NO OTHER WARRANTIES COVERING THE PROGRAMS (OR CONDITIONS), EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Some jurisdictions do not allow the exclusion of implied warranties, so the above exclusion may not apply to you.

SUPPLEMENT TO AGREEMENT FOR SOFTWARE BUNDLING AND DISTRIBUTION FOR ALDC

3. Limitation of Remedies

IBM's entire liability under this license is the following;

1) For any claim (including fundamental breach), in any form, related in any way to this license, IBM's liability will be for actual damages only and will be limited to the greater of:

a) the equivalent of U.S.$25,000 in your local currency; or
b) IBM's then generally available license fee for the Program

This limitation will not apply to claims for bodily injury or damages to real or tangible personal property for which IBM is legally liable.

IBM will not be liable for any lost profits, lost savings, or any incidental damages or other economic consequential damages, even if IBM, or its authorized supplier, has been advised of the possibility of such damages. IBM will not be liable for any damages claimed by you based on any third party claim. This limitation of remedies also applies to any developer of Programs supplied to IBM. IBM's and the developer's limitations of remedies are not cumulative. Such developer is an intended beneficiary of this Section. Some jurisdictions do not allow these limitations or exclusions, so they may not apply to you.

4. General

You may terminate your license at any time. IBM may terminate your license if you fail to comply with the terms and conditions of this license. In either event, you must destroy all your copies of the Program. You are responsible for payment of any taxes, including personal property taxes, resulting from this license. Neither party may bring an action, regardless of form, more than two years after the cause of action arose. If you acquired the Program in the United States, this license is governed by the laws of the State of New York. If you acquired the Program in Canada, this license is governed by the laws of the Province of Ontario. Otherwise, this license is governed by the laws of the country in which you acquired the Program.

Typeface Trademark Acknowledgement

All resident fonts in this printer are licensed from Agfa Corporation.

Helvetica, Palatino and Times are registered trademarks of Linotype-Hell AG.

ITC Avant Garde Gothic, ITC Bookman, ITC ZapfChancery and ITC Zapf Dingbats are registered trademarks of International Typeface Corporation.

Agfa Japan License Agreement Guidelines

1. "Software" shall mean the digitally encoded, machine readable, scalable outline data as encoded in a special format as well as the UFST Software.
2. You agree to accept a non-exclusive license to use the Software to reproduce and display weights, styles and versions of letters, numerals, characters and symbols ("Typefaces") solely for your own customary business or personal purposes at the address stated on the registration card you return to Agfa Japan. Under the terms of this License Agreement, you have the right to use the Fonts on up to three printers. If you need to have access to the fonts on more than three printers, you need to acquire a multi-user license agreement which can be obtained from Agfa Japan. Agfa Japan retains all rights, title and interest to the Software and Typefaces and no rights are granted to you other than a License to use the Software on the terms expressly set forth in this Agreement.
3. To protect proprietary rights of Agfa Japan, you agree to maintain the Software and other proprietary information concerning the Typefaces in strict confidence and to establish reasonable procedures regulating access to and use of the Software and Typefaces.
4. You agree not to duplicate or copy the Software or Typefaces, except that you may make one backup copy. You agree that any such copy shall contain the same proprietary notices as those appearing on the original.
5. This License shall continue until the last use of the Software and Typefaces, unless sooner terminated. This License may be terminated by Agfa Japan if you fail to comply with the terms of this License and such failure is not remedied within thirty (30) days after notice from Agfa Japan. When this License expires or is terminated, you shall either return to Agfa Japan or destroy all copies of the Software and Typefaces and documentation as requested.
6. You agree that you will not modify, alter, disassemble, decrypt, reverse engineer or decompile the Software.
7. Agfa Japan warrants that for ninety (90) days after delivery, the Software will perform in accordance with Agfa Japan-published specifications, and the diskette will be free from defects in material and workmanship. Agfa Japan does not warrant that the Software is free from all bugs, errors and omissions.

   THE PARTIES AGREE THAT ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY, ARE EXCLUDED.
8. Your exclusive remedy and the sole liability of Agfa Japan in connection with the Software and Typefaces is repair or replacement of defective parts, upon their return to Agfa Japan.

   IN NO EVENT WILL AGFA JAPAN BE LIABLE FOR LOST PROFITS, LOST DATA, OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES CAUSED BY ABUSE OR MISAPPLICATION OF THE SOFTWARE AND TYPEFACES.
9. New York, U.S.A. law governs this Agreement.
10. You shall not sublicense, sell, lease, or otherwise transfer the Software and/or Typefaces without the prior written consent of Agfa Japan.
11. Use, duplication or disclosure by the Government is subject to restrictions as set forth in the Rights in Technical Data and Computer Software clause at FAR 252-227-7013, subdivision (b)(3)(ii) or subparagraph (c)(1)(ii), as appropriate. Further use, duplication or disclosure is subject to restrictions applicable to restricted rights software as set forth in FAR 52.227-19 (c)(2).

12. YOU ACKNOWLEDGE THAT YOU HAVE READ THIS AGREEMENT, UNDERSTAND IT, AND AGREE TO BE BOUND BY ITS TERMS AND CONDITIONS. NEITHER PARTY SHALL BE BOUND BY ANY STATEMENT OR REPRESENTATION NOT CONTAINED IN THIS AGREEMENT. NO CHANGE IN THIS AGREEMENT IS EFFECTIVE UNLESS WRITTEN AND SIGNED BY PROPERLY AUTHORIZED REPRESENTATIVES OF EACH PARTY. BY OPENING THIS DISKETTE PACKAGE, YOU AGREE TO ACCEPT THE TERMS AND CONDITIONS OF THIS AGREEMENT.

FCC statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the manufacturer for compliance could void the user's authority to operate the equipment.

Shielded circular cable should be used for interfacing with the computer.

Caution to user

Any modification without prior permission may cause harmful interference.

If any modification/change is introduced to this equipment without prior permission, Kyocera as the manufacturer cannot guarantee compliance with FCC rules.

To use equipment which does not comply with FCC rules is prohibited.

The printer may be optionally installed with the following units:

Conforming to the Class A limits

- HS-3E Bulk Paper Stacker (for FS-3750)
- PF-7E Bulk Paper Feeder

Conforming to the Class B limits

- EF-1 Envelope Feeder
- DU-20 Duplexer (for FS-3750)
- DU-21 Duplexer (for FS-1750/FS-3750)
- HS-20 Paper Handler/Stacker (for FS-3750)
- HS-21 Paper Handler/Stacker (for FS-1750/FS-3750)
- PF-20/PF-20mini Paper Feeder (for FS-3750)
- PF-21/PF-21mini Paper Feeder (for FS-1750/FS-3750)
- SO-6 Sorter/Stacker
- ST-20 Bulk Paper Stacker

Interface connectors

Important note on the interface connectors

Be sure to turn off printer power before connecting or disconnecting an interface cable to the printer. For protection against static discharge which may be applied to the printer's internal electronics through the interface connector(s), keep any interface connector which is not in use capped using the protective cap supplied.

☛ **Use shielded interface cable.**

Safety information

Laser safety

This printer is certified as a Class 1 laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to Radiation Control for Health and Safety Act of 1968. This means that the printer does not produce hazardous laser radiation. Since radiation emitted inside the printer is completely confined within protective housings and external covers, the laser beam cannot escape from the printer during any phase of user operation.

Laser notice

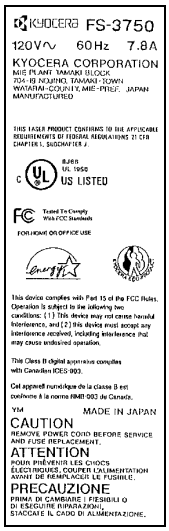
This printer is certified in the U.S. to conform to the requirements of DHHS 21 CFR Subchapter for Class I (1) laser products, and elsewhere is certified as a Class I laser product conforming to the requirements of IEC 825-1.

Caution **Laser radiation when open. DO NOT STARE INTO BEAM OR VIEW DIRECTLY WITH OPTICAL INSTRUMENTS.**

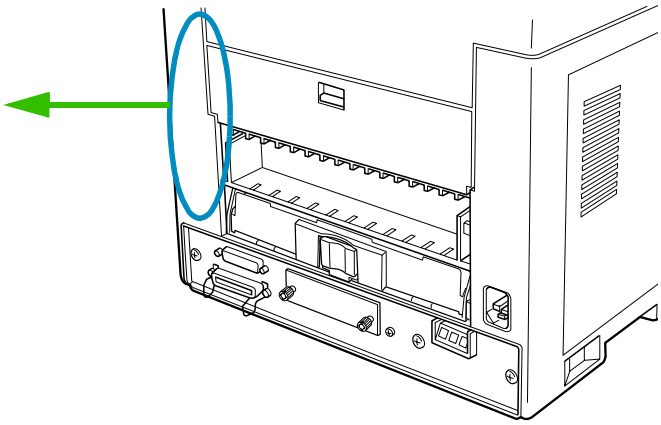
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

(Philippines)

(European/ Asian countries)



(U.S.A./Canada)



The labels shown are affixed to the FS-3750. Similar labels are affixed to same location on the FS-1750.

CDRH regulations

The Center of Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured after August 1, 1976. Compliance is mandatory for products marketed in the United States. A label indicating compliance with the CDRH regulations must be attached to laser products marketed in the United States.

Ozone concentration

The printers generate ozone gas (O_3) which may concentrate in the place of installation and cause an unpleasant smell. To minimize concentration of ozone gas to less than 0.1 ppm, we recommend you not to install the printer in a confined area where ventilation is blocked.

IMPORTANT SAFEGUARDS

1. Read all of these instructions and save these instructions for later use.
2. Unplug this product from the wall outlet before cleaning.
3. Do not use this product near water.
4. Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
5. Slots and openings in the cabinet and the back are provided for ventilation to ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.
6. This product is equipped with a 3-wire grounding type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the purpose of the grounding-type plug.
7. Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.
8. If an extension cord is used with this product, make sure that the total of the ampere ratings on the products plugged into the extension cord do not exceed the extension cord ampere rating.
9. Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.
10. Except as explained elsewhere in User's Manual, do not attempt to service this product yourself. Removing covers may expose you to dangerous voltage points or other risks. Refer all servicing in those compartments to service personnel.
11. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

    A—When the power cord or plug is damaged or frayed.
    B—If liquid has been spilled into the product.
    C—If the product has been exposed to rain or water.
    D—If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
    E—If the product has been dropped or the cabinet has been damaged.

Declaration of Conformity (U.S.A.)

Model Number:	Page Printer FS-1750/FS-3750 (as tested with enhancement optional units: EF-1, PF-21, DU-21, HS-21 and ST-20 etc.)
Trade Name:	Kyocera
Responsible Party:	Kyocera Electronics Inc.
Address:	11465 John's Creek Parkway, Suite #250 Duluth, GA 30097, U.S.A.
Telephone number:	770-623-2150
Fax number:	770-623-2151

Contact person for technical matter:	Paul Bosak
Phone:	770-623-2163

Manufacturer's name:	Kyocera Corporation, Printer Division
Manufacturer's address:	2-14-9 Tamagawadai, Setagaya Ward, Tokyo 158-8610, Japan

This device complies with Part 15 of the FCC Rules, Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CE Marking Directive

according to Council Directive 89/336/EEC and 73/23/EEC

Manufacturer's name:	Kyocera Corporation, Printer Division
Manufacturer's address:	2-14-9 Tamagawadai, Setagaya Ward, Tokyo 158-8610, Japan

declares that the product

Product name:	Page Printer
Model number:	FS-1750/FS-3750 (as tested with enhancement optional units:EF-1, PF-21, DU-21, HS-21 and ST-20 etc.)

conforms to the following product specifications.

EN 55 022:1998 Class B, if operated without PF-7E and without HS-3E
EN 55 022:1998 Class A, if operated with PF-7E and with HS-3E

EN 61 000-3-2:1995

EN 50 082-1:1992
IEC 801-2:1991
IEC 801-3:1984
IEC 801-4:1988

EN 60 950:1992+A1+A2+A3+A4+A11
EN 60 825-1:1994+A11

The manufacturer and its merchandising companies retain the following technical documentation in anticipation of the inspection that may be conducted by the authorities concerned.

User's instruction that conforms to the applicable specifications
Technical drawings
Descriptions of the procedures that guarantee the conformity
Other technical information

KYOCERA ELECTRONICS EUROPE GmbH
Mollsfeld 12
40670 Meerbusch, Germany
Phone: +49 21 59 918 0
Fax: +49 21 59 918 100

Declaration of Conformity (Australia)

Manufacturer's name: Kyocera Corporation, Printer Division
Manufacturer's address: 2-14-9 Tamagawadai, Setagaya Ward, Tokyo 158-8610, Japan

declares that the product

Product name: Page Printer
Model number: FS-1750/FS-3750 (as tested with enhancement optional units: EF-1, PF-21, DU-21, HS-21 and ST-20 etc.)

Description of device: This Page Printer Model FS-3750 is the 18ppm (FS-1750 is the 14ppm); A4 size and utilized plane paper; laser; dry toner etc. The printer can be equipped with several enhancement optional units as a paper feeder as PF-21, a duplexer as DU-21, a sorter as ST-20 etc.

Conforms to the following product specifications.

AS/NZS 3548:	1995	(EN 55 022:1994 Class B, if operated without PF-7E and without HS-3E) (EN 55 022:1994 Class A, if operated with PF-7E and with HS-3E)
IEC60950		(EN 60 950:1992+A1+A2+A3+A4)
IEC60825-1		(EN 60 825-1:1994+A11)

The manufacturer and its merchandising companies retain the following technical documentation in anticipation of the inspection that may be conducted by the authorities concerned.

User's instruction that conforms to the applicable specifications
Technical drawings
Descriptions of the procedures that guarantee the conformity
Other technical information.

The manufacturer has been employed with ISO9001 scheme. The manufacturer has been attested by JQA and BS.

KYOCERA ELECTRONICS AUSTRALIA PTY., LTD

Unit 6, 112 Talavera Road, North Ryde NSW 2113, Australia
Phone: +61 2-9888-9999
Fax: +61 2-9888-9588

Canadian Department of Communications compliance statement

This Class B digital apparatus complies with Canadian ICES-003.

Avis de conformité aux normes du ministère des Communications du Canada

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

ISO 7779

Maschinenlärminformationsverordnung 3. GSGV, 18.01.1991: Der höchste Schalldruckpegel beträgt 70 dB(A) oder weniger gemäß ISO 7779.

Disclaimer

We shall have no liability or responsibility to customers or any other person or entity with respect to any liability, loss or damage caused or alleged to be caused directly or indirectly by equipment sold or furnished by us, including but not limited to, any interruption of service, loss of business or anticipatory profits, or consequential damages resulting from the use or operation of the equipment or software.

Prolonged Non-Use and Moving the Printer

Prolonged Non-use

If you ever leave the printer unused for a long period of time, remove the power cord from the wall outlet.

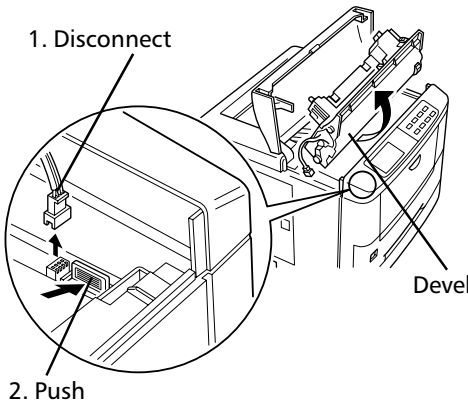
We recommend you consult with your dealer about the additional actions you should take to avoid possible damages that may occur when the printer is used next time.

Moving the Printer

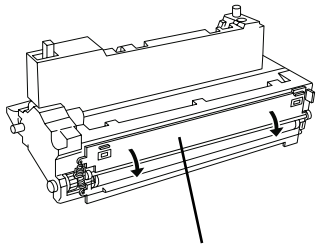
When you move the printer:

- Move it gently.
- Keep it as level as possible, to avoid spilling toner inside the printer.
- If you need to move the printer to another location, first remove the toner container, developer unit, and waste toner bottle. After removing the developer unit from the printer, wrap it in the supplied plastic bag and place it into the box in which the toner container is packaged. Make sure that the waste toner bottle is securely capped and place it in the plastic bag together with the toner container. Be sure to consult a serviceman before attempting long-distance transportation of the printer.

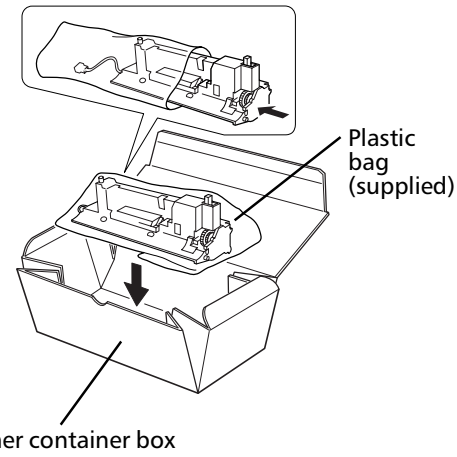
(1) Remove the developer unit.



(2) Close the protect cover.



(3) Pack the developer unit.



To reinstall the developer unit in the printer, use the reverse procedure of the above.

As an ENERGY STAR Partner, Kyocera Corporation has determined that this product meets the ENERGY STAR guidelines for energy efficiency.

ENERGY STAR®

The basic objective of the ENERGY STAR Program is to reduce environmental pollution by encouraging the manufacture and sale of equipment that uses energy more efficiently.

This printer is equipped with a sleep timer function that conforms with the standards of the ENERGY STAR Program. This function makes it possible to reduce the amount of electrical power consumed by the printer.

For maximum power savings, turn off the printer's power supply when not using the printer for extended periods of time.

For details on the sleep timer function and printer power consumption, refer to the instruction manual provided with the printer.

Initial settings of the sleep timer function and power saved using the sleep timer function:

	Initial sleep mode setting	Power consumption in sleep mode
FS-1750	30 minutes (30 minutes)	14 W (30 W)
FS-3750	30 minutes (60 minutes)	16 W (45 W)

( ): ENERGY STAR program guideline

The action program Energy 2000

Energy partnership for a sustainable development.
We get further – with all our energy.

Kyocera ECO-PRODUCT

This product has been developed and manufactured with the express interest of reducing the impact on the environment.

Using Kyocera's innovative cartridge free technology, Kyocera has created an advanced printing system that does not require the wasteful replacement and disposal of a cartridge.

Introduction

The Kyocera laser printer has many extremely desirable features. It has been designed to make a contribution to a cleaner environment as well as to represent the latest generation of page printer technology.

Maintenance Features

- **Compact design**
  Thanks to the inboard cassette configuration, the printer requires no more space than the average computer.
- **Ultra long life modules**
  The drum, developer, and fuser have been designed for ultra long life.
- **Amorphous silicon drum**
  The drum has been developed using Kyocera's unique ceramic technology using amorphous silicon.

Print Engine Features

- **Superb print quality**
  Using 1200 dots per inch in "Fast 1200 mode" or "Fine 1200 mode", the printout is close to typeset quality. Also, with Kyocera Image Refinement (KIR) technology, high quality printing can be achieved even at 600 dpi and 300 dpi.
- **High speed**
  A4 sizes typically print at the rate of 18 (14 for the FS-1750) pages per minute. (Actual time varies according to page complexity)
- **Large paper capacity**
  Approximately 250 sheets can be loaded into the paper cassette, and about 100 sheets can be loaded into the MP tray.
- **Wide variety of print media**
  As well as standard paper, the printer will print on OHP film, labels and other types of special purpose media.
- **Sleep mode**
  Conserves energy during the printer's idle periods.
- **Ecoprint mode**
  Extends the toner yield by reducing the amount of toner used on the page.
- **Standard bi-directional parallel interface**
  Supports high-speed data exchange with the computer.

Software Features

- **Wide variety of available fonts**
  The printer comes with 80 PCL/PS compatible fonts installed.
- **Kyocera's own PRESCRIBE 2e printer language**
  Allows advanced graphic capabilities that allow you to print out any outline shape or solid form, as well as providing a variety of special effects such as patterned fills, gray-scale shading, a user accessible print image model, and multiple page orientations and print directions within the same page.
- **Automatic rotation of fonts and graphics**
  Images and fonts are automatically rotated to match the page orientation.
- **A wide variety of internal symbol sets**
  The printer supports most PCL 6 symbol sets.
- **Display of printer messages in any of four languages**
  English, French, German, or Italian. As an option it is also possible to download the messages in other languages. Please contact your Kyocera dealer.
- **Memory card slot for option fonts, macros, forms, etc.**
  Data in the memory card can be selectively read from the printers control panel.
- **Simple network management protocol (SNMP) compliance**
  Offers network managers complete open network management.
- **Kyocera PrintMonitor**
  Provides network wide management of the Kyocera FS family of laser printers. Refer to the readme file located in the Kyocera Digital Library CD-ROM (included with the printer) for details.
- **PDF417 two-dimensional bar codes**
  The printer includes the capability that allows the user to implement the two-dimensional stacked bar code symbology, PDF 417, or Portable Data File 417.

Options

The following options are available for the printer.

DU-20	Duplexer (for FS-3750)
DU-21	Duplexer (for FS-1750/FS-3750)
EF-1	Envelope Feeder
HS-20	Paper Handler/Stacker (for FS-3750)
HS-21	Paper Handler/Stacker (for FS-1750/FS-3750)
HS-3E	Bulk Paper Stacker (for FS-3750)
PA-1	Paper Path Adaptor
PA-20	Paper Path Adaptor
PF-20/PF-20mini	Paper Feeder (for FS-3750)
PF-21/PF-21mini	Paper Feeder (for FS-1750/FS-3750)
PF-7E	Bulk Paper Feeder
PT-4	Face-up Output Tray (for FS-1750)
SO-6	Sorter/stacker
ST-20	Bulk Paper Stacker

Guide to the Manual

Unless specifically stated otherwise, information in this manual applies to printer models FS-1750/ FS-3750. The printer illustrations and printed samples used in this manual are of the FS-3750.

User's Manual (This booklet)

The User's Manual is this booklet. This manual guides you through the following topics:

- Installation
- Printer operation
- Control panel operations
- Fonts
- Maintenance and troubleshooting

CD-ROM (Kyocera Digital Library)

The CD-ROM supplied contains the printer User's Manual, PRESCRIBE 2e Programming Manual, and PDF417 Two Dimensional Bar Code Implementation Manual. To gain access to these documents, insert the CD-ROM into the appropriate drive and follow the instructions on the insert accompanying the CD-ROM. To view these documents, you need the Adobe Acrobat software installed in your computer. For details, read the instructions on the CD-ROM package.

The User's Manual guides you through topics concerning the operations and maintenance of the printer.

The PRESCRIBE 2e Programming Manual explains how to use the PRESCRIBE 2e commands in document files for formatting, and their parameters in detail for experienced users, using pictures and samples.

User's Manual (on CD-ROM):

Includes the text of this manual.

PRESCRIBE 2e Programming Manual (on CD-ROM):

- PRESCRIBE 2e command reference
- Fonts
- Bar codes
- Printer permanent parameters
- Emulation

PDF417 Two Dimensional Bar Code Implementation Manual (on CD-ROM):

- PDF417 overview
- PRESCRIBE 2e commands for PDF417

Table of Contents

Chapter 1 Installing the Printer 1-1

1.1. Positioning the Printer 1-1
Clearance 1-1
Places to Avoid 1-1
Basic requirements 1-2
Power Supply 1-3

1.2. Unpacking and Inspection 1-3
List of Shipped Components 1-4

1.3. Names of Parts 1-5
Front View 1-5
Interior View 1-6
Rear View 1-6

1.4. Setting Up and Interfacing 1-7
1—Open the top cover 1-8
2—Install the toner container 1-8
3—Close the top cover 1-9
4—Install the waste toner bottle 1-9
5—Adjusting the paper guides in the cassette and adding paper 1-11
6—Open the paper stopper on the face-down output tray 1-13
7—Install the face-up output tray (if required) 1-13
8—Connect the printer to the computer 1-14
9—Attach the power cord 1-14
10—Print a status page 1-15
11—Test the interface with the computer 1-15
12—Set the emulation mode 1-15
13—Install the printer driver 1-16

1.5. MP (Multi-Purpose) Tray Feeding 1-19
First Mode (Automatic Manual Feeding) 1-19
Cassette Mode 1-19
Duplex Printing from the MP tray 1-19
Selecting the MP Tray 1-19

1.6. Memory Card 1-22
Handling a Memory Card 1-22

1.7. Memory Expansion Installation 1-23
Removing the Main Circuit Board 1-23
SIMM to be used 1-25
Installing and Removing SIMMs 1-25
Testing the Expansion Memory 1-26

Chapter 2 Operating the Laser Printer 2-1

2.1. Control Panel 2-1
Message Display 2-2
Interface Indicator 2-2
Resolution Indicator 2-2
Paper Size Indicator 2-3
Copy Indicator 2-3
Symbolic Indicators 2-4
Control Keys 2-5

2.2. Operating Procedures 2-6
Switching Power On 2-6
Stack Selection 2-6
Feed Selection 2-6
On-line/Off-line Setting 2-7
Canceling Printing 2-7
Status Printout 2-8
Form Feed 2-10

2.3. Using the Mode Select Menu 2-11
Mode Select Menu 2-11

2.4. Configuring Interfaces 2-13
Parallel Interface 2-13

2.5. RAM DISK 2-14
Setting the RAM DISK Size 2-14
RAM DISK Operations 2-14

2.6. Operating a Memory Card 2-15
Hints on Writing Fonts to the Memory Card 2-15
Reading Fonts/Data from a Memory Card 2-15
Writing Data to a Memory Card 2-15
Deleting Data from a Memory Card 2-16
Formatting a Memory Card 2-17
Printing a list of data names 2-17

2.7. Setting Custom Sizes 2-18

2.8. Setting the Paper Type 2-19
Making Settings 2-20
Paper Type User Setting 2-20

2.9. Sleep (Ecopower) Mode 2-22

2.10. Dumping Received Data 2-23

2.11. KIR 2 Level 2-24

2.12. Ecoprint Mode 2-25

2.13. Resource Protection 2-26

2.14. Adjusting the Print Density 2-26
2.15. Setting the Audio Warning (Buzzer) 2-27

Chapter 3 Fonts 3-1

3.1. Internal Fonts 3-1
3.2. List of Fonts 3-2

Chapter 4 Maintenance 4-1

4.1. Toner Kit Replacement 4-1
Toner Kit to be Used 4-1
Supplying Toner 4-1
Replace the Waste Toner Bottle 4-4
4.2. Cleaning 4-6
Main Charger Unit 4-6
Paper Feed Unit 4-8

Chapter 5 Troubleshooting 5-1

5.1. General Guide 5-1
5.2. Power Problems 5-2
5.3. Interface Problems 5-2
5.4. Print Quality Problems 5-3
Completely blank printout 5-3
All-black printout 5-3
Dropouts, horizontal streaks, stray dots 5-4
Black or white vertical streaks 5-4
Faint or blurred printing 5-5
Grey background 5-5
Dirt on the top edge or back of the paper 5-6
Characters out of position 5-6
5.5 Indicators and Messages 5-7
Indicators 5-7
Maintenance Messages 5-8
Error Messages 5-10
5.6. Correcting a Paper Jam 5-12

Appendix A Printer Specifications A-1

Appendix B Paper Selection B-1

B.1. General Guidelines B-1
Paper Availability B-1
Paper Specifications B-1

B.2. Selecting the Right Paper B-2

B.3. Special Paper B-4
Overhead Projection (OHP) Film B-5
Adhesive-Backed Labels B-5

Appendix C Host Computer Interface C-1

C.1. Parallel Interface C-1
Parallel interface communication modes C-1
Interface Signals C-2

C.2. RS-232C/RS-422A Interface C-4
RS-232C interface C-4
RS-422A interface C-5

C.3. RS-232C/RS-422A Protocol C-8
PRESCRIBE 2e FRPO D0 command C-9

C.4. RS-232C Cable Connection C-9
Preparing an RS-232C Cable C-9
Connecting the Printer to the Computer C-10

Index Index-1

Mode Select Menu ..... Last page

Chapter 1
Installing the Printer

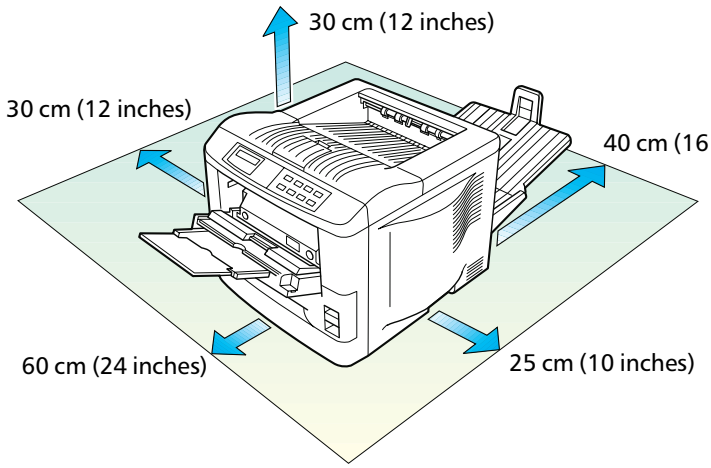
This chapter explains how to unpack and install the printer. The topics covered are:

Positioning the printer
Unpacking and inspection
Names of parts
Setting up and interfacing

1.1. Positioning the Printer

Clearance

Allow at least the necessary minimum clearance around the printer (see below). A total space of 92 cm by 61 cm by 138 cm (36 by 24 by 54 inches) is needed.


30 cm (12 inches)
30 cm (12 inches)
40 cm (16 inches)
[20 cm (8 inches) when the face-up output tray* is not installed.]
* Optional with the FS-1750
60 cm (24 inches)
25 cm (10 inches)

Places to Avoid

Avoid installing the printer in locations subject to:

- Direct drafts of hot or cold air
- Direct drafts from outside (Avoid locations near doors leading outside.)
- Sudden temperature or humidity changes
- Sources of high temperature, for example, near stoves or radiators
- Excessive dust
- Vibration
- Ammonia or other harmful fumes. (If you are planning to fumigate the room, or make liberal use of insecticide, remove the printer first!)
- Excessive sunlight or humidity
- Lack of ventilation
- Low air pressure, e.g., located more than 2000 meters (6500 feet) above sea level

Basic requirements

The printer will work best if it is installed in a location that is:

❒ Near the computer

If the parallel interface is used to connect the printer to the computer, the connecting cable should be shielded type and not be longer than 3 meters (10 feet).

❒ Level and well supported

Place the printer on a sturdy table or desk. Do not place the printer on an unstable cart, stand, or table. The printer may fall, causing injury, or serious damage to the printer.

❒ Near an AC wall outlet, preferably one that can be used for the printer alone (see section *Power Supply* on next page).

Power requirements are:

Voltage	120 V (U.S.A./Canada), 220 V to 240 V (European countries), ±10 % at each voltage
Frequency	60 Hz (120 V), ±2 % 50 Hz/60 Hz (220 V to 240 V), ±2 %
Current capacity	FS-1750: Max. 5.8 A at 120 V, or Max. 3 A at 220 V to 240 V FS-3750: Max. 7.8 A at 120 V, or Max. 4 A at 220 V to 240 V

The outlet should be earthed, or an adapter should be used.

If an extension cord is used, the total length of the power cord plus extension should be 5 meters (17 feet) or less.

❒ Well ventilated, not too hot or cold, and not too damp or dry

Temperature	10°C to 32.5°C (50°F to 90.5°F)
Humidity	20% to 80%

If you install the printer where the temperature or humidity is outside the above ranges, you may not get the best print quality, and there will be an increased chance of paper jams.

Power Supply

The printer should not be on the same power circuit as an air conditioner, fluorescent light, copier, or shredder, because these devices generate electrical noise on the power line. If it must share a power circuit with equipment like this, a high-frequency noise filter or isolation transformer is advisable. (Filters and transformers are available commercially.)

Avoid using plug multipliers to connect a large number of devices on the same circuit as the printer.

If the power from the outlet itself appears to be unstable, a line stabilizer should be used. In places where the voltage tends to fluctuate, it may be necessary to install a voltage regulator.

As the disconnect device is not incorporated in the printer's AC primary circuit, an easily accessible socket outlet must be provided near the equipment.

If the printer is used with the optional Sorter (SO-6) or Stacker (ST-20), in order to avoid short-circuiting, it should be ensured that these devices are plugged securely into their respective power outlets.

Da kein Trennschalter in den Wechselstrom-Primärkreis des Druckers eingebaut ist, muß eine leicht zugängliche Steckdose in der Nähe des Gerätes vorhanden sein.

Wenn der Drucker mit dem gesonderten Sorter (SO-6) oder Stapler (ST-20) verwendet wird, muß darauf geachtet werden, daß diese Geräte einwandfrei an separate Steckdosen angeschlossen sind, um Kurzschluß zu vermeiden.

1.2. Unpacking and Inspection

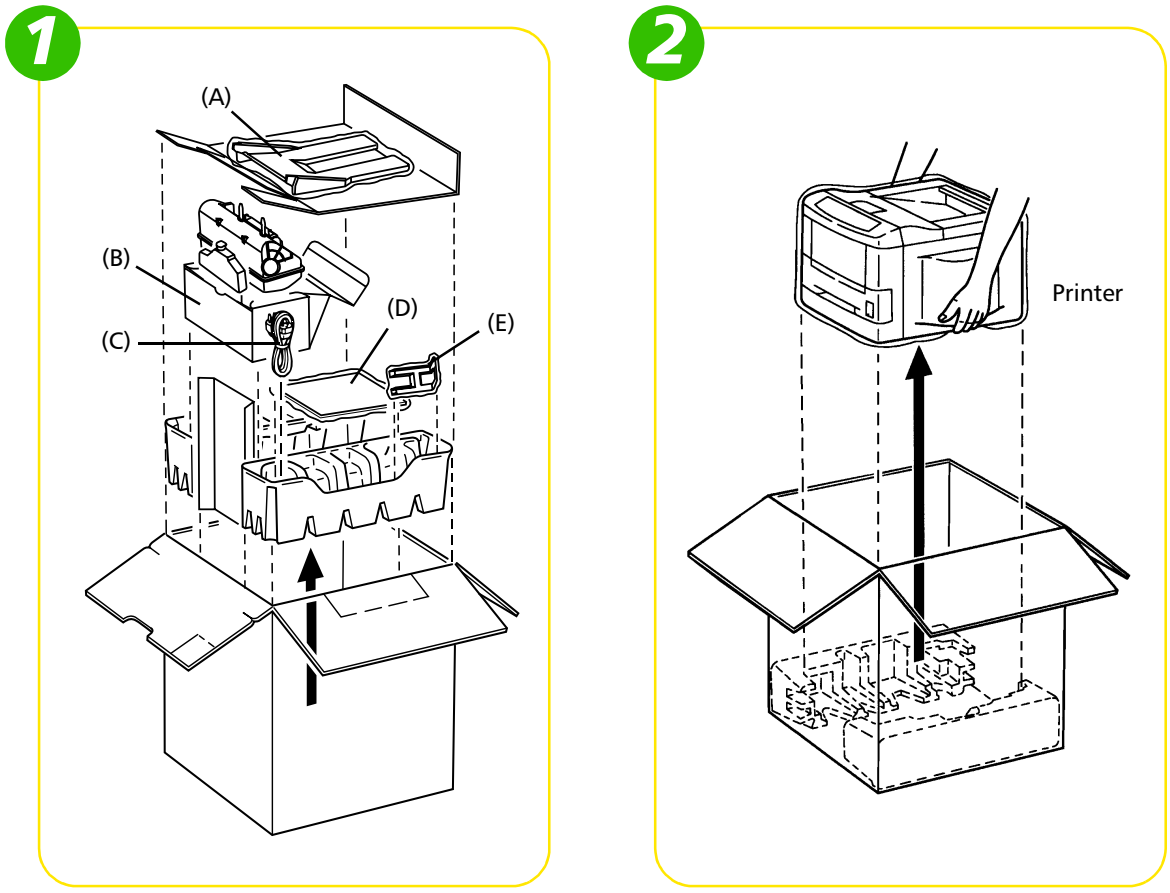
The printer is packed as shown below. Unpack the printer following diagrams 1 and 2 on the next page. While unpacking it, check that the listed parts are all accounted for.

Examine the package for any signs of damage that may have been caused during transportation. If the carton is found to be badly damaged, leave the carton unopened and immediately notify the dealer from whom you purchased the printer.

Save the box and other packing materials in case you have to repack the printer for transportation at a later date.

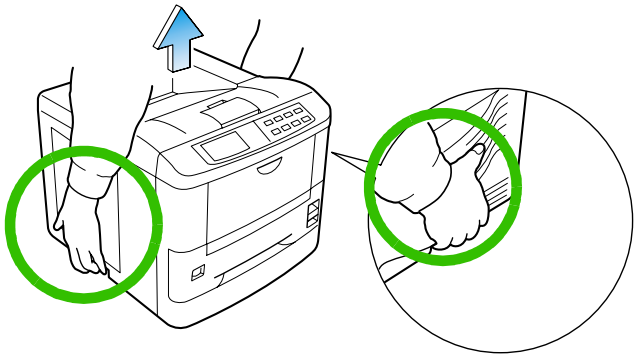
List of Shipped Components

- (A) Face-up Output Tray (FS-3750 only)
- (B) Toner Kit (Box for the Developer Unit)
- (C) Power Cord
- (D) User's Manual and Kyocera Digital Library (CD-ROM), including the printer drivers and manuals.
- (E) Paper Stopper (FS-3750 only)



To remove the printer from the box, grasp the handholds on either side of the printer. Lift the printer from the carton as shown below.

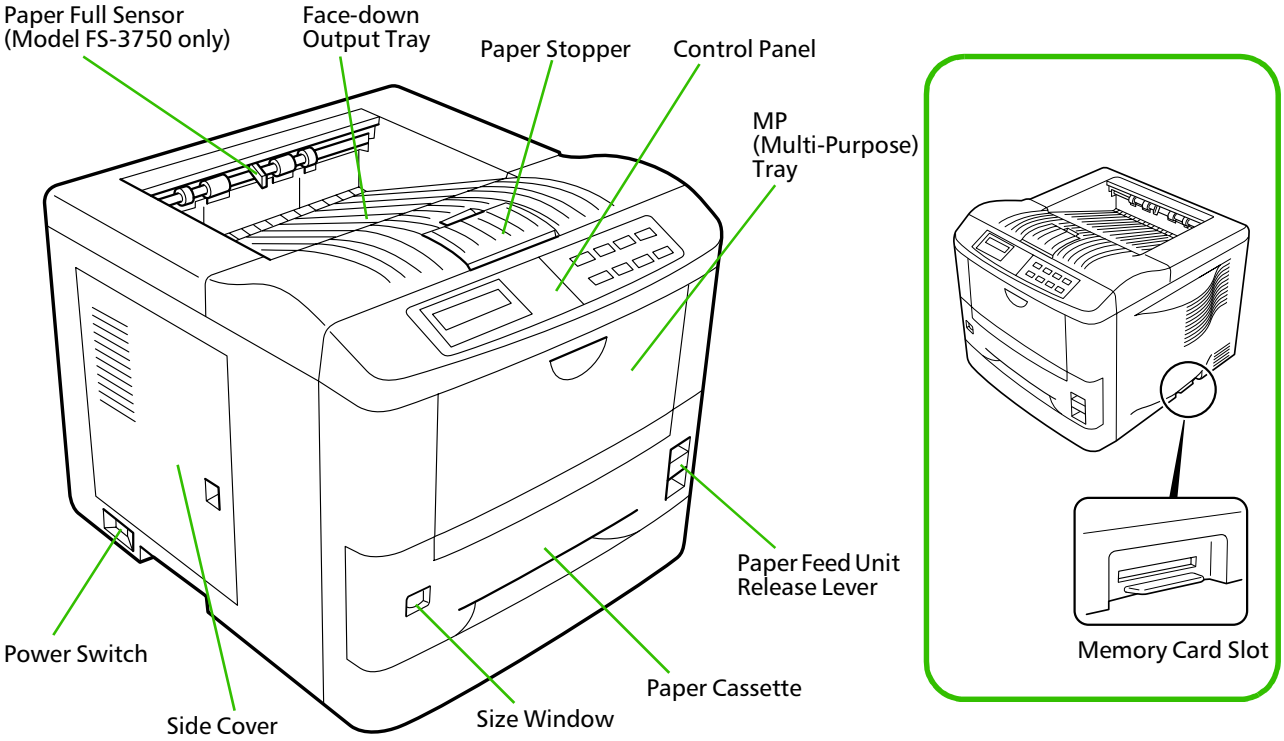
- **Always use these handholds whenever you lift or move the printer.**
- **The handhold on the right side of the printer doubles as the memory card slot. Be sure to remove the memory card first, if inserted, before lifting or moving the printer.**

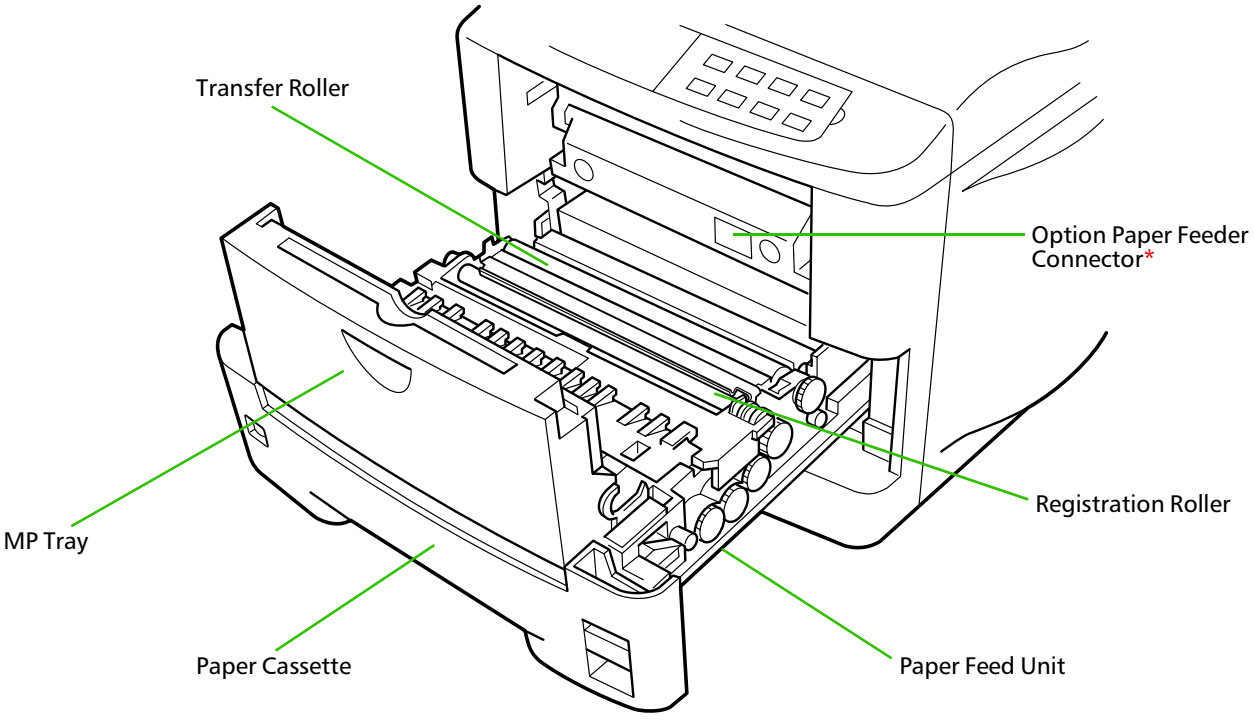


1.3. Names of Parts

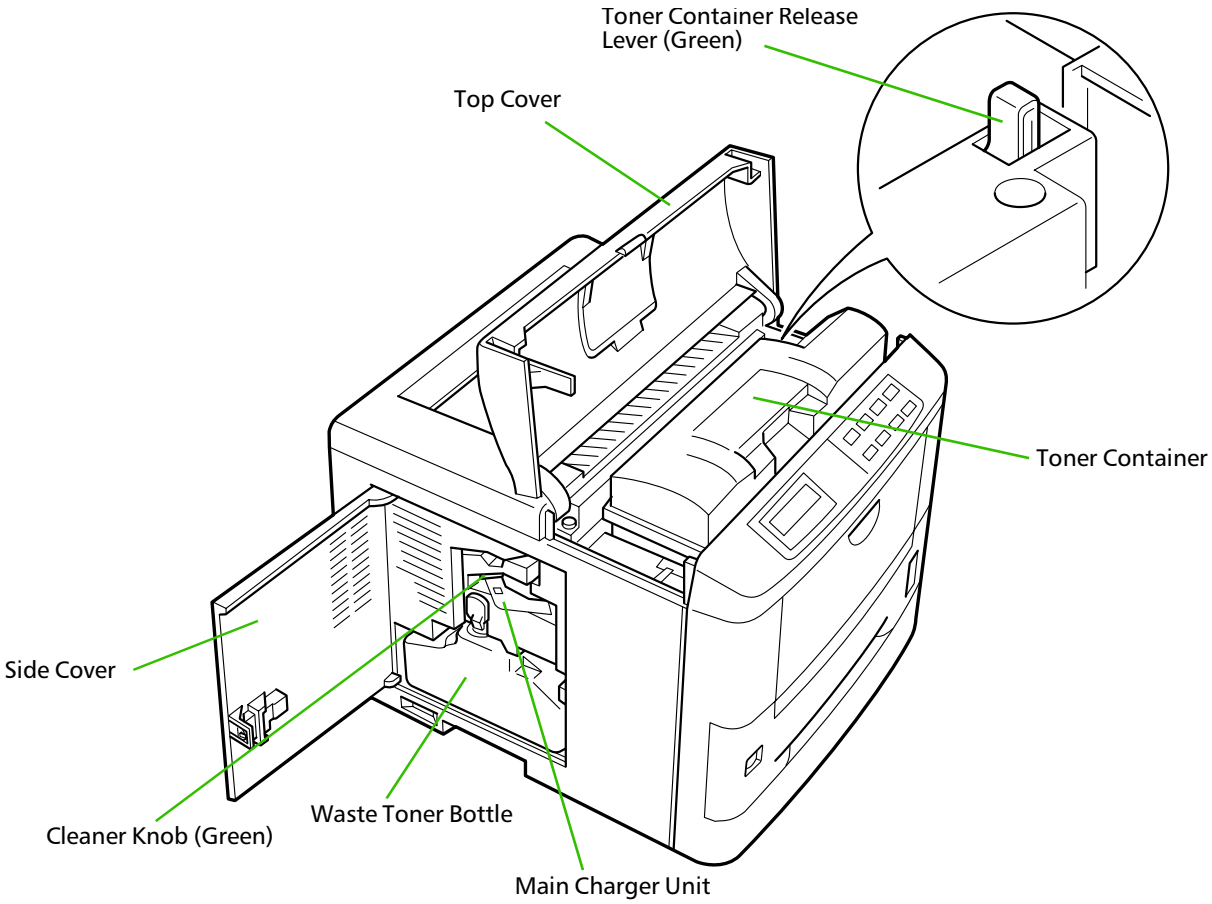
This section takes you on a guided tour of the printer, pointing out its major parts. The part names introduced here will be used throughout this manual.

Front View

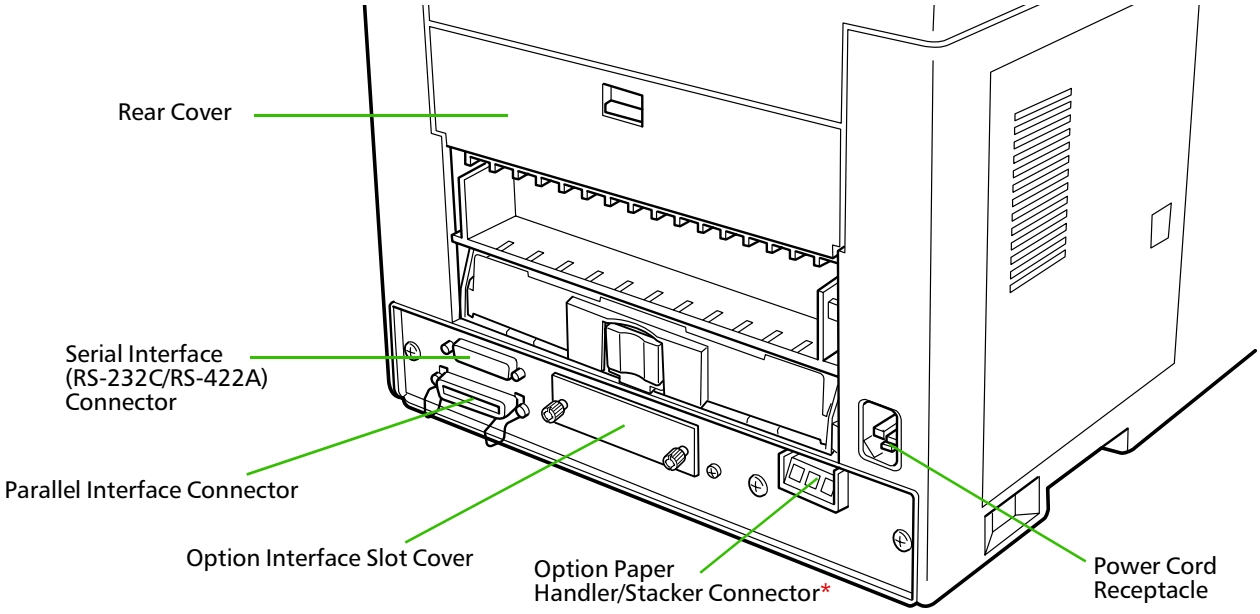




Interior View



Rear View



*: To protect the printer against static discharge, the connector must be covered with the supplied protective cap when not in use.

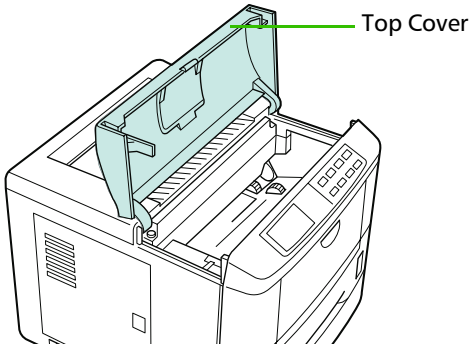
1.4. Setting Up and Interfacing

Before you can use the printer for the first time, you must set up the printer by installing the printer components and interfacing with the computer. The steps to be followed in setting up are:

1. Open the top cover.
2. Install the toner container.
3. Close the top cover.
4. Install the waste toner bottle.
5. Adjusting the paper guides in the cassette and adding paper.
6. Open the paper stopper on the face-down output tray.
7. Install the face-up output tray (if required).
8. Connect the printer to the computer.
9. Attach the power cord.
10. Print a status page.
11. Test the interface with the computer.
12. Set the emulation mode.
13. Install the printer driver.

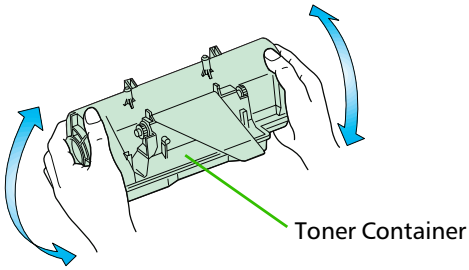
1—Open the top cover

1. Remove the packing tape from the printer.
2. Open the printer top cover all the way.



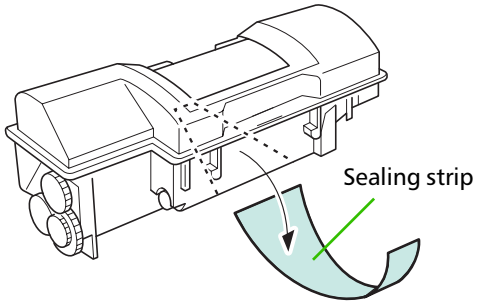
2—Install the toner container

1. Take the toner container from the toner kit.
2. With the label side down, thoroughly shake the toner container (in the direction of the arrow) ten times or more to loosen and mix the toner inside.

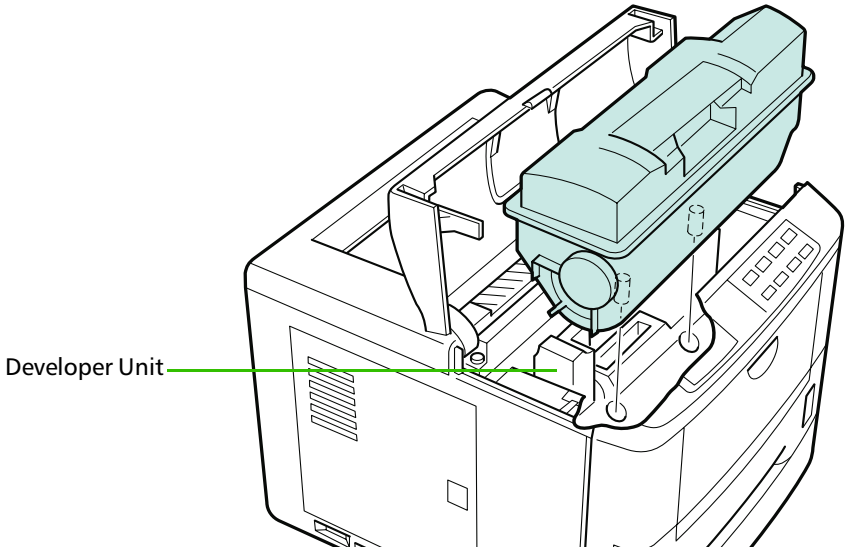


3. The bottom of the toner container is sealed with a sealing strip. Peel off the seal on the toner container and carefully pull off and dispose of the sealing strip.

☞ **Be sure to peel the seal off the toner container before the toner container is fitted into the developer unit.**

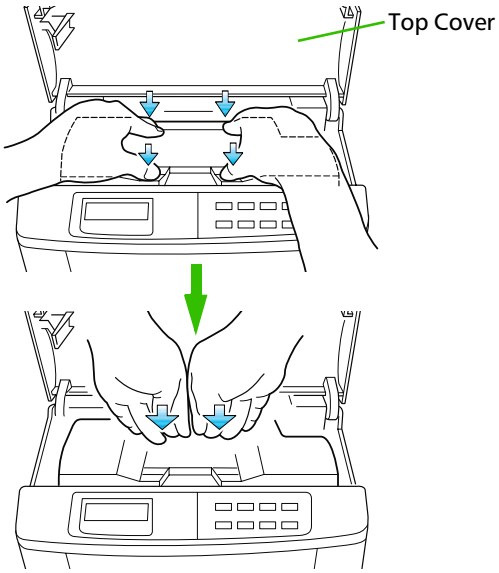


4. Install the toner container on the developer as show in the diagram.



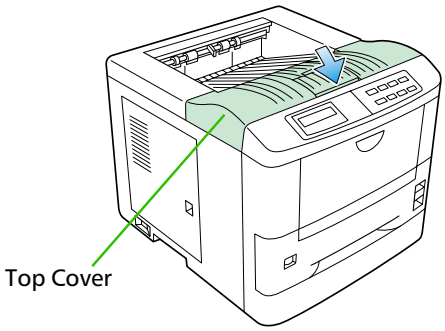
5. When the toner container is installed correctly on the developer, push the top of the container unit ("**PUSH HERE**") until it locks in.

☛ **Make sure that the toner container is properly locked in the printer.**



3—Close the top cover

Close the top cover by pressing the arrowed part in this diagram.



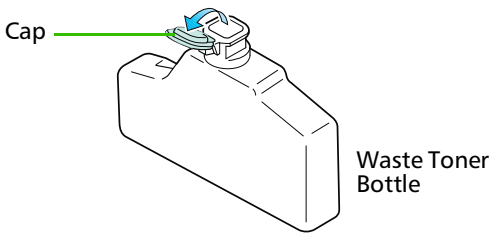
4—Install the waste toner bottle

The waste toner bottle is in the toner kit supplied with the printer. The waste toner bottle must be installed in the printer.

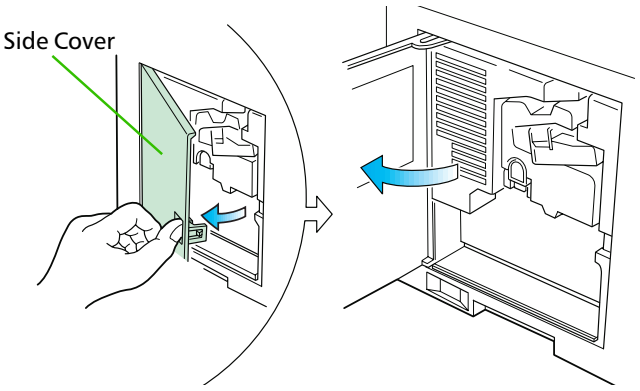
Install the waste toner bottle in the printer as follows.

1. Take the waste toner bottle from the toner kit supplied.

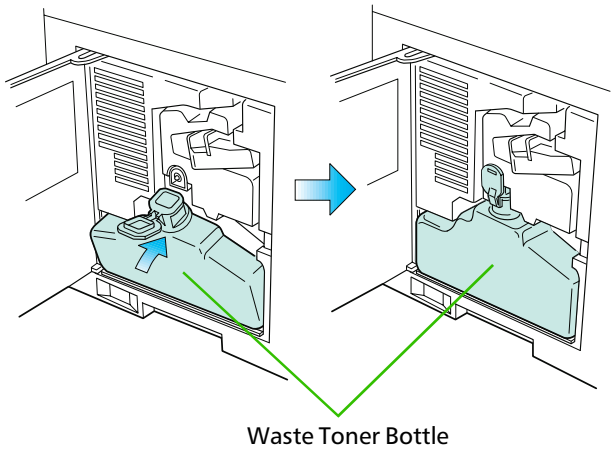
☛ **Do not cap the waste toner bottle.**



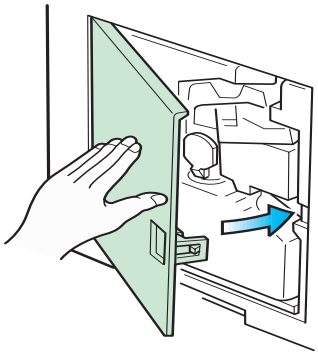
2. Open the side cover on the left side of the printer.



3. Insert the waste toner bottle with the bottle tilted slightly towards you as shown in the figure.



4. Ensuring that it is correctly inserted, close the side cover.

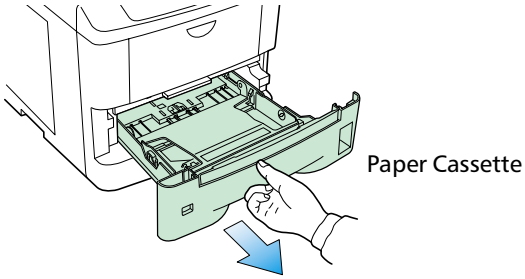


5—Adjusting the paper guides in the cassette and adding paper

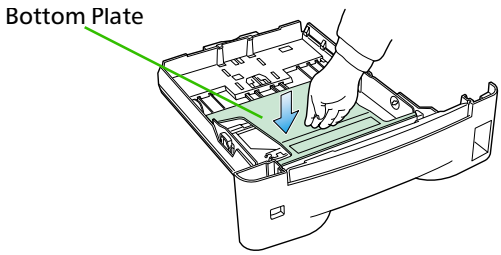
The paper cassette provided with the printer can accommodate paper sizes from A5 to legal, by adjusting the position of the paper guides and the paper stopper. Paper sizes that are not standard sizes (custom sizes) but within the size limitations can also be loaded into the cassette. When loading custom sizes into the cassette, the size must be input into the printer on the control panel. (Refer to *2.7. Setting Custom Sizes*) Standard size paper settings are indicated as fixed positions in the cassette.

- **Before adding paper, remove the paper cassette all the way from the printer.**
- **Read the paper manufacturer's instructions concerning handling of the paper.**

1. Remove the paper cassette from the printer, and place it on a flat, stable surface.

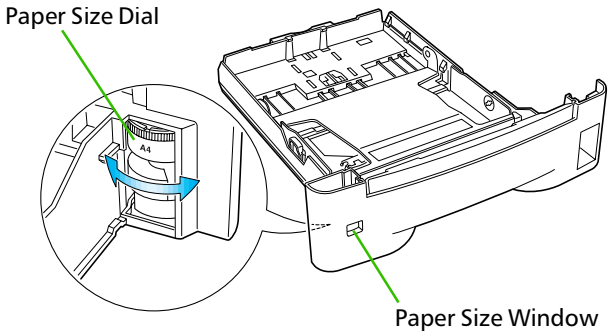


2. Push the bottom plate down until it locks.



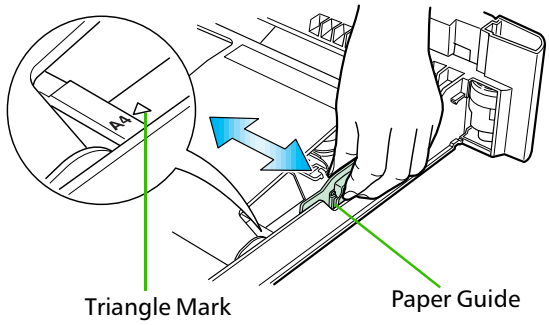
3. Turn the paper size dial so that the size of the paper you are going to use appears in the paper size window.

- **When the paper size dial is set to "Custom" the paper size must be set into the printer on the control panel. See *2-7 Setting Custom Sizes* for the setting procedure.**



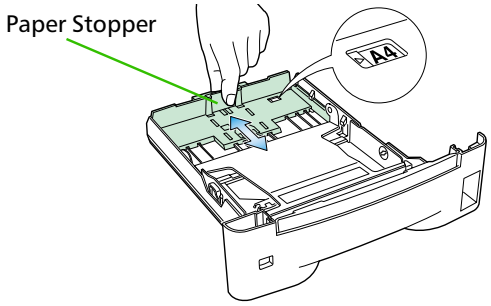
4. Adjust the paper guide and paper stopper positions.

Move the paper guides while lifting the green latch on the right. Set the triangular markings on the guides to the size of paper that you are to use as indicated.



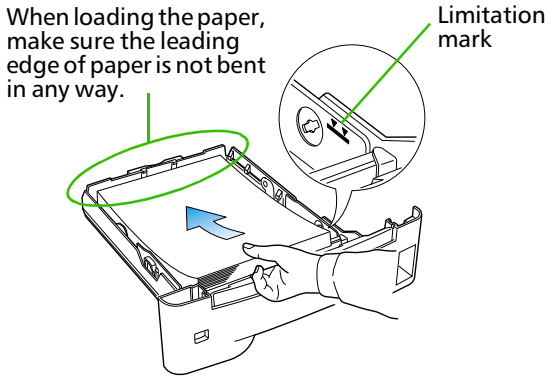
Move the paper stopper while pushing on the green button at the back. Set the paper stopper to the size of paper that you are to use as indicated in the small windows on the floor of the cassette.

When using custom size paper, move the paper guides and paper stopper all the way out, insert the paper, and then adjust the paper guides and paper stopper to suit. Adjust them so that they are in light contact with the paper.

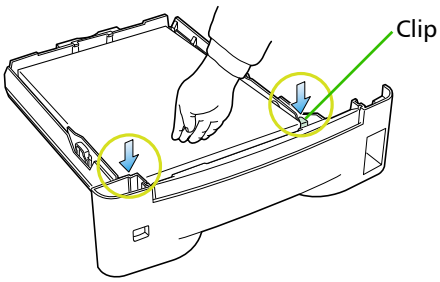


5. Tap the edges of the paper to align the sheets neatly. Set the paper in the cassette as shown. The side of paper that faces downward in the cassette is the one on which printing is done.

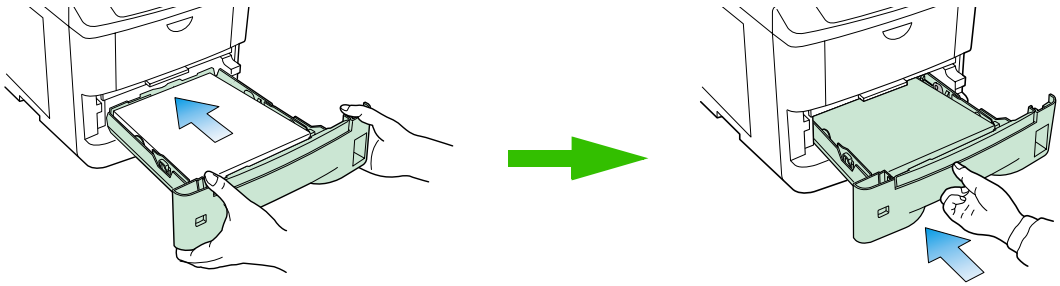
Do not load paper into the cassette higher than the limitation mark on the right (The cassette should hold approximately 250 sheets of paper with a 0.1 mm thickness.)



6. Set the stack of paper so that it is under the clips as shown.



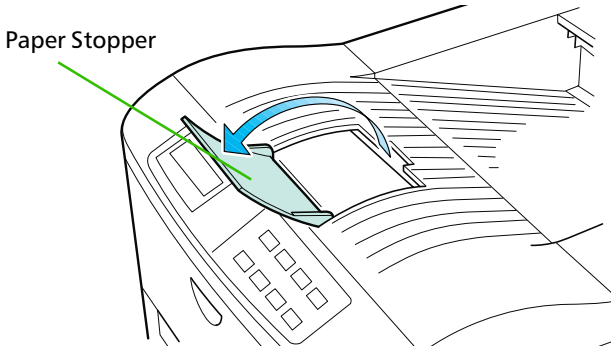
7. Hold the cassette as shown in the illustration and insert the paper cassette into the printer cassette slot. Push it straight in as far as it will go.



If the paper size dial on the cassette is not set to match the size of paper inserted, a paper jam may result.

6—Open the paper stopper on the face-down output tray

Open the paper stopper as shown right.

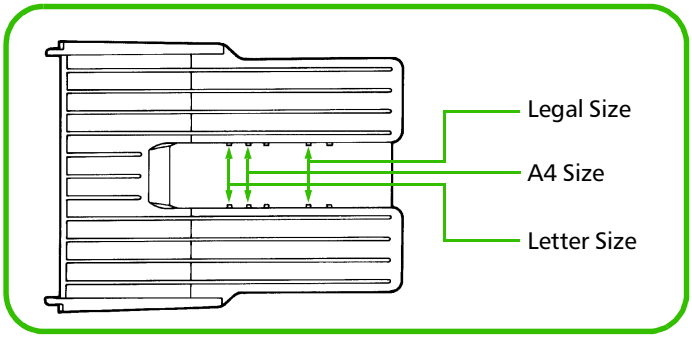


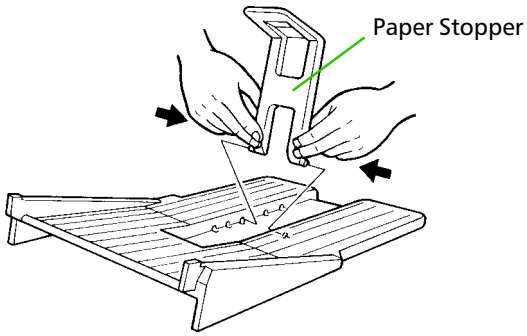
7—Install the face-up output tray (if required)

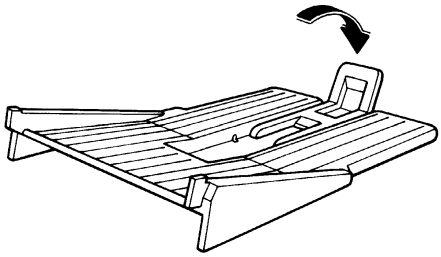
☛ **This face-up output tray is a separate option (PT-4) with the FS-1750.**

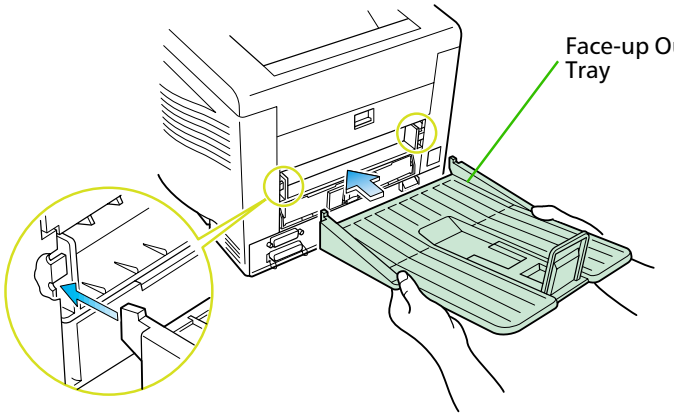
If you want the printed pages stacked face-up (in reverse order), mount the face-up output tray as follows.

Depending on the size of the paper you use, mount the paper stopper on the face-up output tray as shown below.



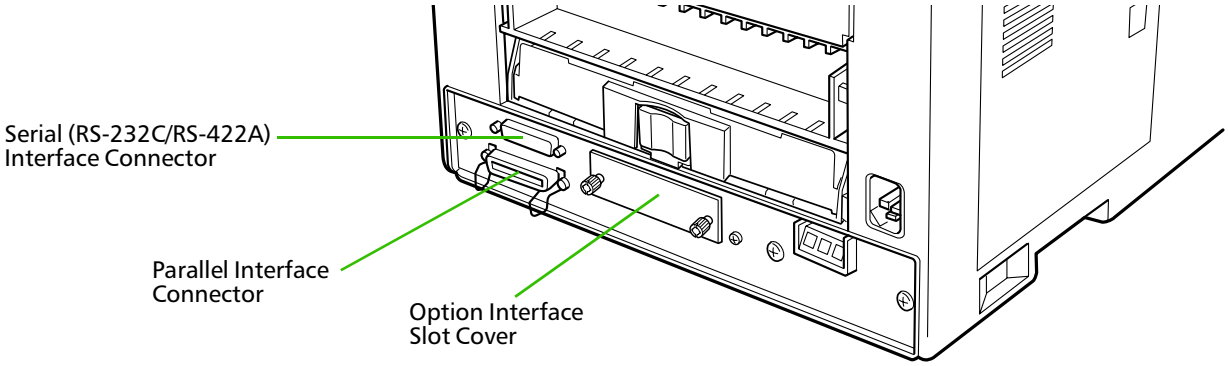






8—Connect the printer to the computer

The printer has two computer cable connectors and a slot for installing an option interface. The one marked "🖶" is for a parallel (Centronics standard) interface. The one marked "**IOIOI**" is for a serial (RS-232C/RS-422A) interface. You may use whichever is convenient for your computer, with the option interface, if you have already have one installed. All interface connectors can be used simultaneously with different computers.



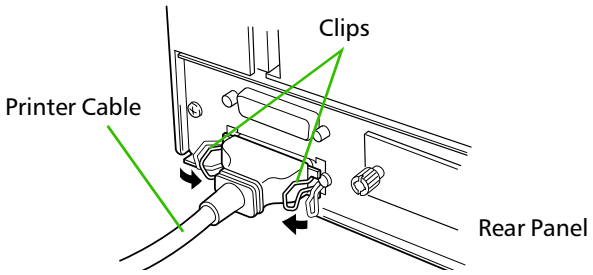
☛ **Only connect or disconnect cables to the connectors while the printer and computer power are switched off.**

Parallel interface

Plug one end of the cable into the connector marked *Parallel* on the printer. Close the clips on both sides to hold it in place.

Plug the other end into a parallel (Centronics) interface connector on your computer. This connector is usually marked *PRINTER*.

See *Appendix C* for more details about the parallel interface.

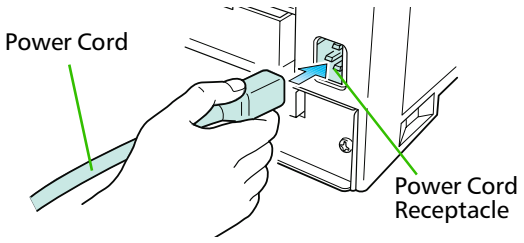


Serial interface

The serial interface of this printer is set to RS-232C mode before leaving the factory, but can also be set to RS-422A mode to suit your operating environment. Follow the instructions in *Appendix C*.

9—Attach the power cord

1. Check that the power switch is off.
2. Plug one end of the power cord into the receptacle at the back of the printer.
3. Plug the other end into the wall outlet.



10—Print a status page

Test that the printer works by printing out a status page as follows.

1. Switch on the printer's power. The message display should indicate `Self test`.

☞ **When the printer is first switched on after installation, there will be a delay of several minutes (approx. 6 to 7 minutes) before the printer gets ready to print. During this period, the message display shows `Please wait`.**

2. Wait until the ON LINE indicator is also lit and the message display indicates `Ready`.
3. Press the **STATUS** key. The printer should print a page listing the positions of margins, memory allocation, and other information.

A sample status printout is shown in *Chapter 2*.

11—Test the interface with the computer

Test that the printer and computer are correctly connected. If you have connected the printer and computer with a parallel interface cable, follow the procedure below.

1. Check that the printer's message display indicates `Ready` and that the ON LINE indicator is ON.
2. Boot the computer in DOS mode, or set the computer to DOS (prompt) mode.
3. At the DOS prompt, type the following.

```
ECHO !R! STAT; EXIT;>PRN
```

If the printer prints a status page, the computer and printer are connected correctly. For details on the status page, refer to *Chapter 2*.

If you do not get this result, check that the cable is securely plugged in at both ends, and repeat the test. If you still do not get the right result, you may have a defective or improperly-wired cable. Try using a different cable.

12—Set the emulation mode

The printer emulates the operation of five other printers. It is factory-set to emulate the PCL 6 at power-up. If you primarily use software that supports PCL 6, or that supports the Kyocera printer itself, the factory setting is the one you want. If you primarily use software that supports another printer, it is convenient to change the printer's power-up emulation mode.

The emulation mode can be changed from the printer control panel. To change the emulation mode, refer to the *Mode Select Menu* diagram on the last page of this manual.

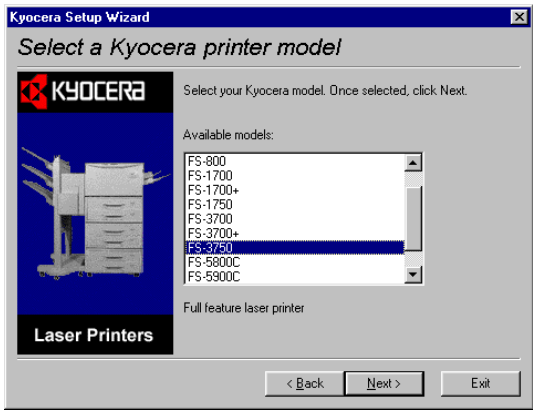
13—Install the printer driver

Printer drivers are provided for using the printer with Windows 95, Windows 98, or Windows 3.1. Use the *Kyocera Digital Library* CD-ROM supplied with the printer. To install the printer driver, proceed as follows. Reference to the Windows manual is also recommended.

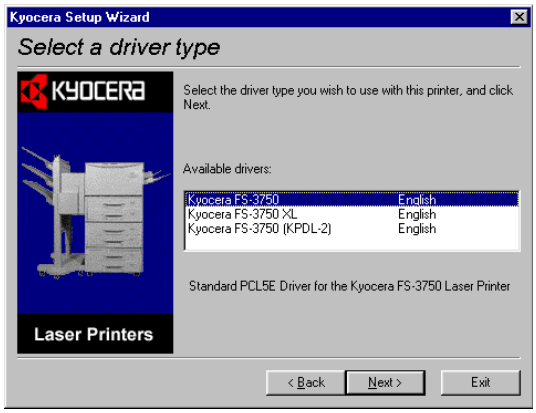
Windows 95/Windows 98

The automatic installation screen appears when the CD-ROM for the printer is inserted into the computer, if the computer is set for CD auto-run. Proceed with the installation according to the instructions that appear on the screen. Read the explanation below for information about the main screens during installation.

Select *FS-3750* or *FS-1750* from this screen.

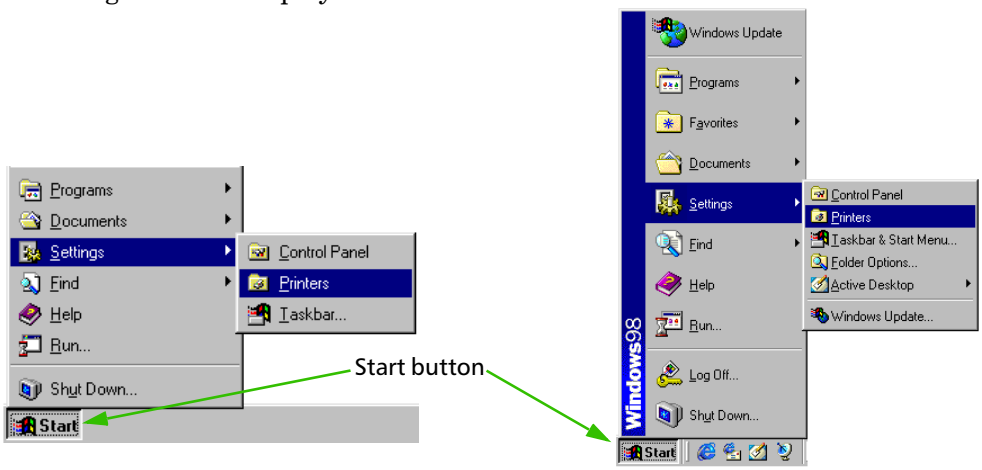


The types of drivers are shown below. Select the driver that you need. (When you click an explanation appears below the box.


Kyocera Setup Wizard
Select a driver type
KYOCERA
Select the driver type you wish to use with this printer, and click Next.
Available drivers:
Kyocera FS-3750 English
Kyocera FS-3750 XL English
Kyocera FS-3750 (KPDL-2) English
Standard PCL5E Driver for the Kyocera FS-3750 Laser Printer
Laser Printers
< Back
Next >
Exit

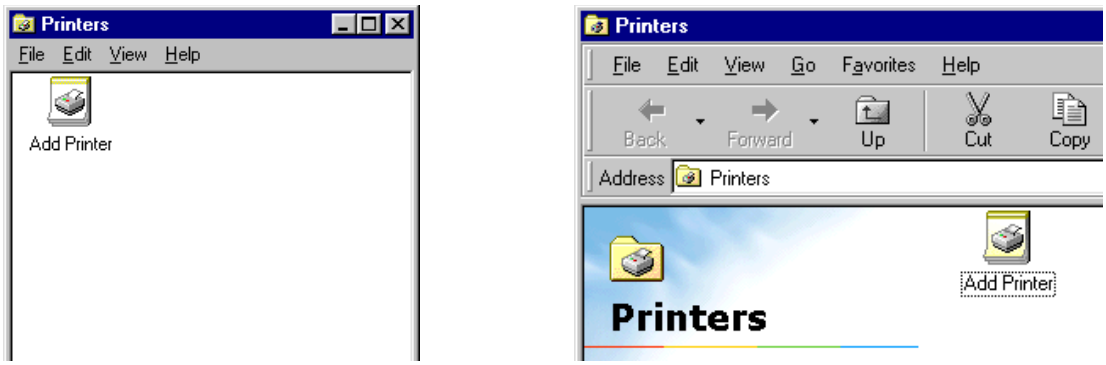
Depending on the computer, installation screens may not appear. If this happens, install the printer driver according to the procedure below.

1. Insert the supplied CD-ROM (Kyocera Digital Library) into the CD-ROM drive of the computer.
2. Click on *Start* with the mouse on the Windows95/98 Task Bar, and align the cursor with *Settings*. Click on *Printers* among the items displayed.



Windows 95 Windows 98

3. The printer folder will open. Double click on *Add printer*.



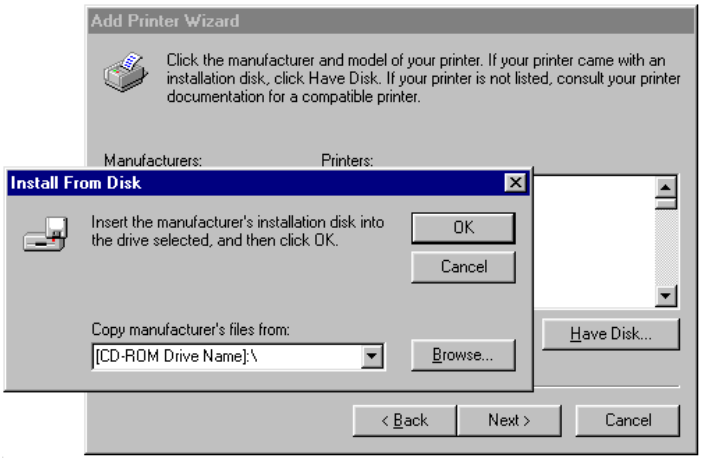
Windows 95 Windows 98

4. The Printer Wizard screen will appear. Click on *Next* >.
5. A screen for selecting the printer to be connected will appear. Select the most appropriate printer and click on *Next*.
6. Next, *Click the manufacturer and model of your printer....* screen will appear. At this point, select *Have Disk ...* located at the lower right. (See the figure for Step 7.)
7. A screen for installing from floppy disk will appear. Copy manufacture's files from inside the box, or input one of the following directories:

   (Standard PCL5E driver)
   [CD-ROM Drive Name]:\drivers\[Language]\pcl\9x

   (Standard PCLXL driver)
   [CD-ROM Drive Name]:\drivers\[Language]\pcl\9x\enhanced

(Standard KPDL driver)
[CD-ROM Drive Name]:\drivers\[Language]\kpdl\9x


Add Printer Wizard
Click the manufacturer and model of your printer. If your printer came with an installation disk, click Have Disk. If your printer is not listed, consult your printer documentation for a compatible printer.
Manufacturers:
Printers:
Install From Disk
Insert the manufacturer's installation disk into the drive selected, and then click OK.
OK
Cancel
Copy manufacturer's files from:
[CD-ROM Drive Name]:\
Browse...
Have Disk...
< Back
Next >
Cancel

8. Select *Kyocera FS-1750* or *Kyocera FS-3750* click on *Next* >, and follow the on-screen instructions to install. Once the driver has been properly installed, a Kyocera printer icon will be added to the printers folder.

When printing under Windows 95/98, be sure to set the emulation of this printer to PCL 6 (default setting).

Windows 3.1

To install the printer driver for Windows 3.1, proceed as follows:

1. Insert the Kyocera Digital Library CD-ROM in your CD-ROM drive.
2. Start Windows on your computer.
3. Double click on *Control Panel*.
4. Double click on *Printers*.
5. Click on *Add*.
6. Click on *Install*.
7. Select *Install Unlisted or Updated Printer* under *List of Printers*.
8. Click *Install*.
9. Select the drive into which you inserted the *Kyocera Digital Library CD-ROM*, and then select one of the following directories.

   (Standard PCL5E driver)
   [CD-ROM Drive Name]:\drivers\[Language]\pcl\3x

   (Standard PCLXL driver)
   [CD-ROM Drive Name]:\drivers\[Language]\pcl\3x\enhanced

   (Standard KPDL driver)
   [CD-ROM Drive Name]:\drivers\[Language]\kpdl\3x

   Click *OK* and follow the instructions that appear on the screen.
10. When the driver is installed, click on *Close* to close *Control Panel*.

1.5. MP (Multi-Purpose) Tray Feeding

The MP tray is incorporated on the front of the printer. It can be used in one of two modes: first mode or cassette mode. The MP tray can hold about 100 sheets of paper (A4 size, 0.1 mm thickness).

If you set a full number of sheets for sizes bigger than A4, it could cause a paper jam. In this case, set a lower number of sheets than the full amount, confirm that there will be no paper jams and then commence printing.

First Mode (Automatic Manual Feeding)

The printer automatically feeds any paper placed on the MP tray even if another paper source is selected. After all paper in the MP tray is printed, paper will be fed from the paper source originally set. (This is the factory set default.)

Cassette Mode

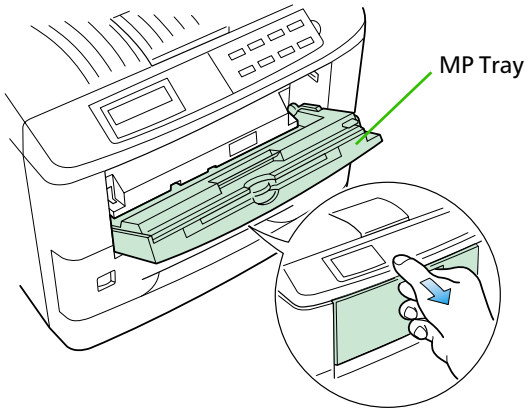
The cassette mode provides faster printing speed than the first mode. Approximately 100 sheets of paper can be continuously fed in this mode.

Duplex Printing from the MP tray

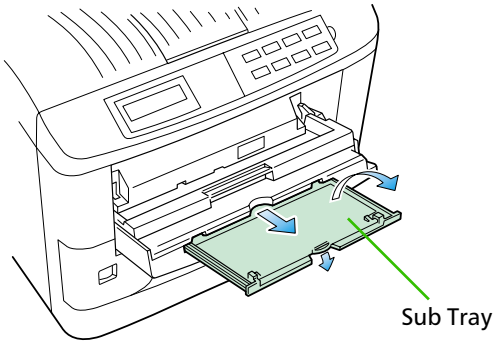
In first mode, be sure to set the MP tray to the same paper size and paper type as set for the current cassette. If the paper size or type differs, a paper jam may result. Also note that it is not possible to select the MP tray as the current cassette and perform duplex printing. We therefore recommend that duplex printing be performed from the paper cassette. An optional duplexer (DU-21) is required to perform duplex printing.

Selecting the MP Tray

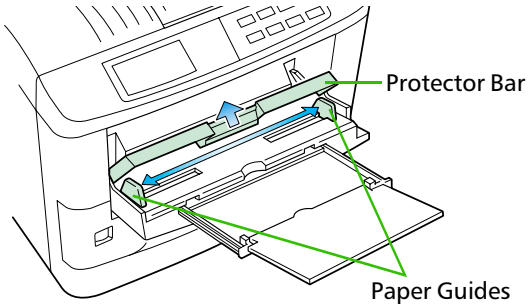
1. Taking hold of the front of the printer as shown in the figure, open the MP tray by pulling towards you.



2. Withdraw the sub tray as shown in the diagram.



3. Raise the paper protector bar until it locks in the up position. Then adjust the paper guides to the size of the paper being fed.



4. Check that the message `Ready` is displayed in the printer's message display, and that the ON LINE indicator is lit.
5. Set the paper source to the multi-purpose tray by pressing the **FEED** key until the message display indicates `MP tray`. The multi-purpose tray indicator on the control panel will flash, and `Add paper` will be displayed.
6. Press the **MODE** key. Then use **+** or **–** keys to display `Paper handling >`.
7. Press the ▶ (**Form Feed**) key to display `>MP tray size` or `> MP tray type`, then press the **ENTER** key so you can set the paper size or type to be fed from the MP tray. See *Mode Select Menu* at the end of this manual.

The following pages explain the use of the MP tray in the Cassette Mode and First Mode.

First Mode (Automatic Manual Feeding)

The printer automatically feeds the paper placed on the MP tray regardless of the current paper source selection. To use the first mode (automatic manual feeding mode), simply place a sheet of paper on the MP tray in the same manner as above, even while the printer is presently feeding the paper in the printer's cassette.

1. Press the **MODE** key. Then use **+** or **–** keys to display `Paper handling >`.
2. Press the ▶ (**Form Feed**) key to display `>MP tray mode`.
3. After pressing the **ENTER** key, the mode display is changed by pressing the **+** and **–** keys. Display `First` and then press the **ENTER** key.

```
>MP tray mode
 First
```

4. Press the **EXIT** key.

☞ **The printer will not switch to light the MP tray indicator while the paper is fed manually using the automatic manual feeding mode.**

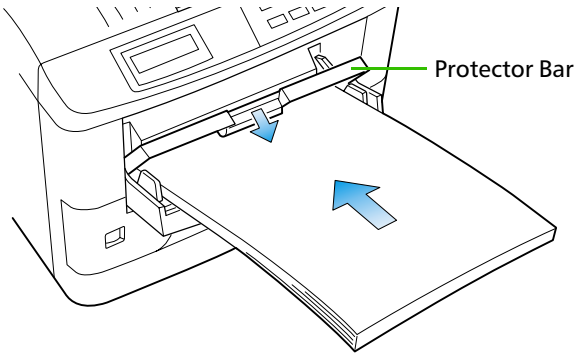
Cassette Mode

1. Press the **MODE** key to display `Paper handling >`.
2. Press the ▶ (**Form Feed**) key to display `>MP tray mode`.
3. After pressing the **ENTER** key, the mode display is changed by pressing the + and – keys. Display `Cassette` and then press the **ENTER** key.

```
>MP tray mode
 Cassette
```

4. Press the **EXIT** key.
5. Insert the paper so that it is aligned straight in the tray. About 100 sheets (0.1 mm thickness) can be inserted at one time.

   `Ready` appears on the message display.



6. Carefully lower the protector bar, and the paper will be correctly set in the MP tray.

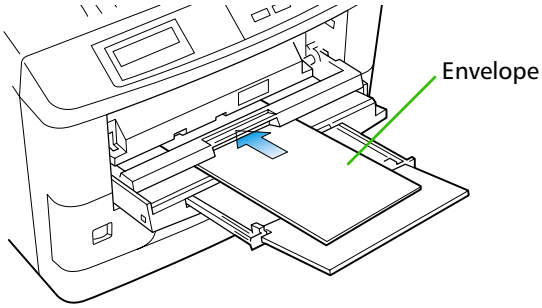
Feeding Envelopes

Envelopes should be fed face up, right side first, as shown below. From the MODE SELECT menu, set the printer to print in landscape page orientation.

To avoid trouble, we recommend that envelopes are delivered face-up. Use the STACK key on the printer control panel to select the face-up tray.

Not all envelopes print well. See *Appendix B* for details on suitable types of envelopes.

See *page 2-3* for the envelope sizes that can be set.



1.6. Memory Card

A memory card is a microchip card containing, for example, nonresident fonts and/or macros, forms, etc. The printer reads the contents of the card into its internal memory when power is switched on. The presence of this data in the printer memory can be confirmed on the status printout.

☛ **The maximum card capacity that can be used is 32 Megabytes. The type of the memory card to be used must be of either flash memory card (+5V type) or SRAM-type and conform to the PCMCIA 2.1 (JEIDA 4.2) standards. Please use a memory card recommended by Kyocera.**

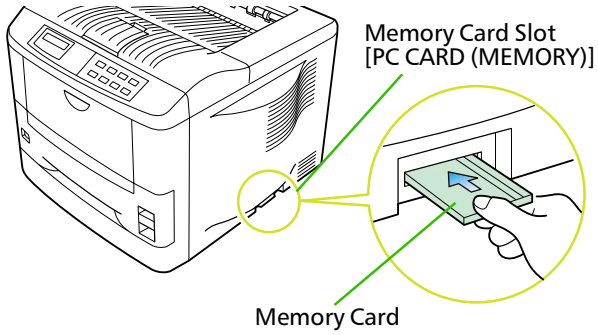
The memory card slot is located at the bottom right of the printer.

To insert and use a memory card:

1. Switch printer power off.

☛ **Do not insert or remove a memory card while power is on. If the memory card is removed while the printer is on, damage could result in the printer's electronics or the memory card.**

2. Insert the memory card in the slot. Insert it face up, connector end first. Push it in all the way.



3. Switch printer power on. The printer reads the contents of the memory card during its power-up sequence. The information (nonresident fonts, etc.) on the memory card is now available for use.

If the memory card information is deleted from the printer's memory during the printing process, it can be reread by using the mode selection function explained on the last page in this manual.

To Remove the Memory Card:

1. Switch the power off.
2. Remove the memory card from the slot.

Handling a Memory Card

A memory card contains sensitive electronic circuits. Treat them with appropriate care.

- ❒ A memory card is sensitive to electrostatic discharge. Please discharge yourself before touching a memory card.
- ❒ Never attempt to force a memory card into its slot.
- ❒ Never bend a memory card.
- ❒ Avoid impact. Do not drop a memory card.
- ❒ Do not touch the terminals of the memory card.
- ❒ Do not spill water or other liquids on a memory card.
- ❒ Keep a memory card away from naked flames and other sources of heat.
- ❒ Do not leave a memory card lying in direct sunlight.

For details regarding the use of the memory card, refer to *2.6. Operating a Memory Card* in this manual.

1.7. Memory Expansion Installation

In this section is explained how to expand the printer's memory. Expanded printer memory enables you to print more complex pages, download more fonts, and define more macros.

It begins by explaining how to remove the main circuit board from the printer, and explains how to install a SIMM (single in-line memory module) on the main circuit board.

The FS-1750 comes supplied with 8 MB of memory installed, and likewise the FS-3750 comes with 16 MB of memory supplied. Two slots are provided for expanding the memory in your printer so that more complex printing can be done, as well as increasing the printing speed. By installing the optional memory card into your printer, the memory in the FS-1750 can be increased to a maximum of 72 MB, and the FS-3750 can be increased to a maximum of 64 MB.

- **A 16 MB SIMM is installed in one of the SIMM sockets in the FS-3750, so in order to increase the memory to the maximum 64 MB this SIMM must be changed.**
- **The expansion memory should be installed only by a Kyocera authorized dealer or Kyocera certified technician. Kyocera shall not be liable for damage due to improper installation of the expansion memory.**

The minimum memory requirements for the printer with various options installed are listed in the table below. Please refer to this table when expanding the printer's memory.

Printing condition	Resolution			
	300 dpi	600 dpi	1200 dpi	
			Fast mode	Fine mode
PCL 6, duplex mode = None	8 MB	8 MB	8 MB	8 MB
PCL 6, duplex mode = On	8 MB	8 MB	8 MB	12 MB
KPDL, duplex mode = None	8 MB	8 MB	8 MB	8 MB
KPDL, duplex mode = On	8 MB	8 MB	12 MB	12 MB
PCL 6/KPDL resource protection, duplex mode = None	–	10 MB	10 MB	10 MB
PCL 6/KPDL, resource protection, duplex mode = On	–	14 MB	14 MB	14 MB

Removing the Main Circuit Board

The main circuit board of the printer is equipped with two sockets for memory expansion. Expansion memory is available in the form of a SIMM.

- **The following instructions are intended for the technician only.**

Notes on Handling the Main Circuit Board and SIMM

Protect the electronics by taking these precautions:

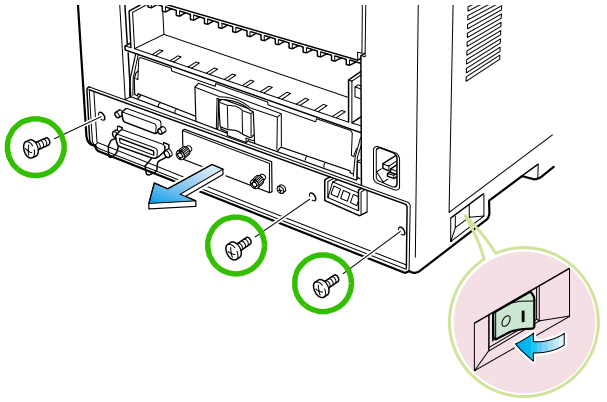
- Before touching the main circuit board, touch a water pipe or other large metal object to discharge yourself of static electricity. While doing the work, it is recommended that you wear an antistatic wrist strap.
- Touch the main circuit board and SIMM only by the edges.

Withdrawing the Main Circuit Board from the Printer

☞ **Be sure to remove the memory card first if inserted in the printer's memory card slot.**

Withdraw the main circuit board completely from the printer as follows:

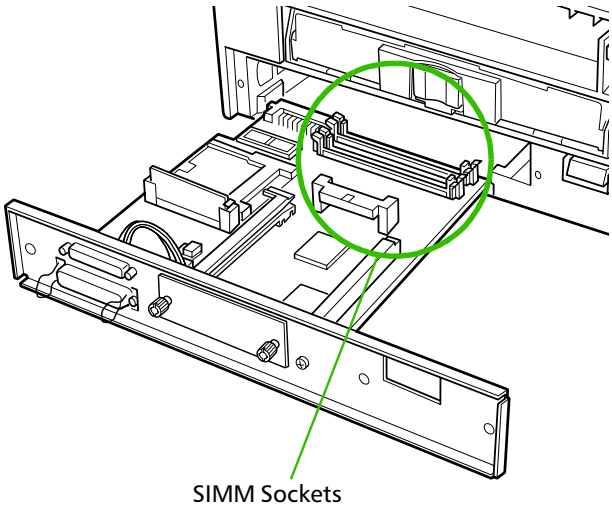
1. Turn the printer's power off. Unplug the printer's power cable and disconnect the printer from the host computer.
2. Remove the three screws from the printer's rear cover.



3. Pull the main circuit board all the way out of the printer.

☞ **Before pulling the main board out, clean an area on the table, etc., at the back of the printer's rear panel. Foreign objects, accidentally sticking to the back of the main board, can cause serious damage to the printer.**

Install the SIMM as described on the next page.



SIMM to be used

See your Kyocera dealer for purchasing information of the SIMMs that are best suited for use with this printer.

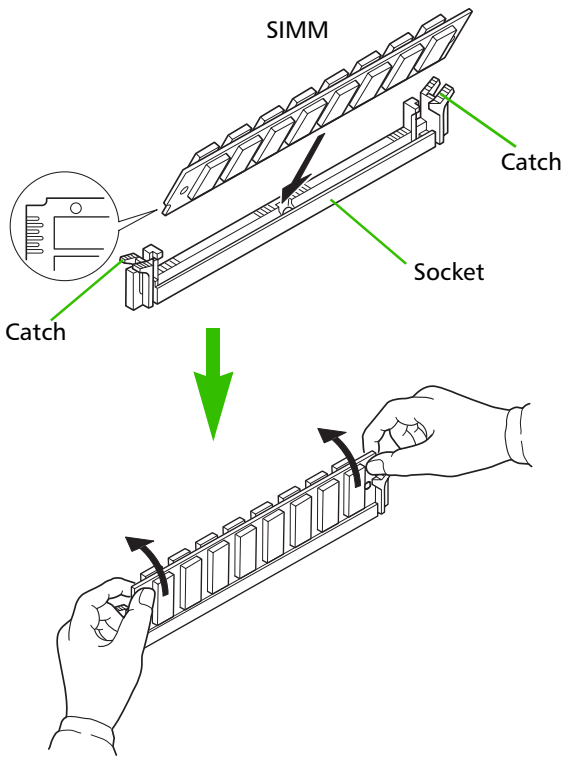
Either 4 MB, 8 MB, 16 MB or 32 MB SIMMs can be used for memory expansion.

Installing and Removing SIMMs

Installing SIMMs

Insert the SIMM into the socket as shown right.

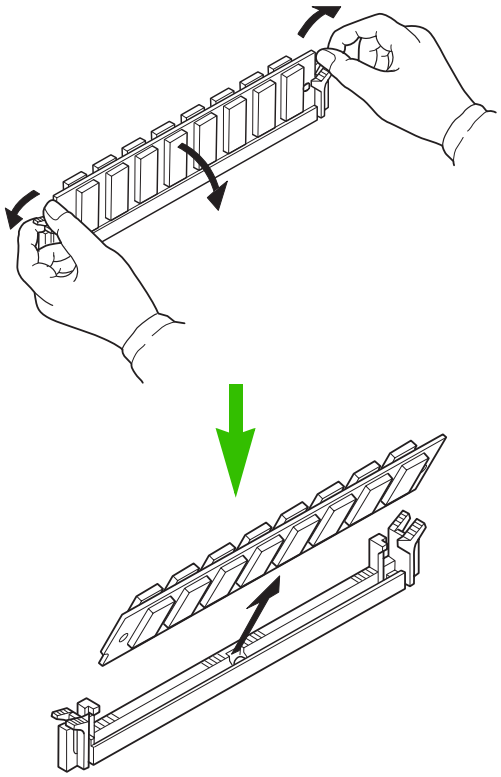
1. Insert the connector end of the SIMM into the socket.
2. Carefully push the board upright until it snaps into place. Make sure that the catches at the ends of the socket fit into the holes at the ends of the SIMM board.



Removing SIMMs

To remove a SIMM, carefully pull the end catches slightly outwards and tilt the SIMM as shown, then pull the SIMM out of the socket.

Reverse the procedure under *Withdrawing the Main Circuit Board from the Printer* to put the main circuit board back into the printer.



Testing the Expansion Memory

After you have finished installing SIMMs in the printer, test the printer to see if the installation has been successful.

To test the expansion memory, proceed as follows:

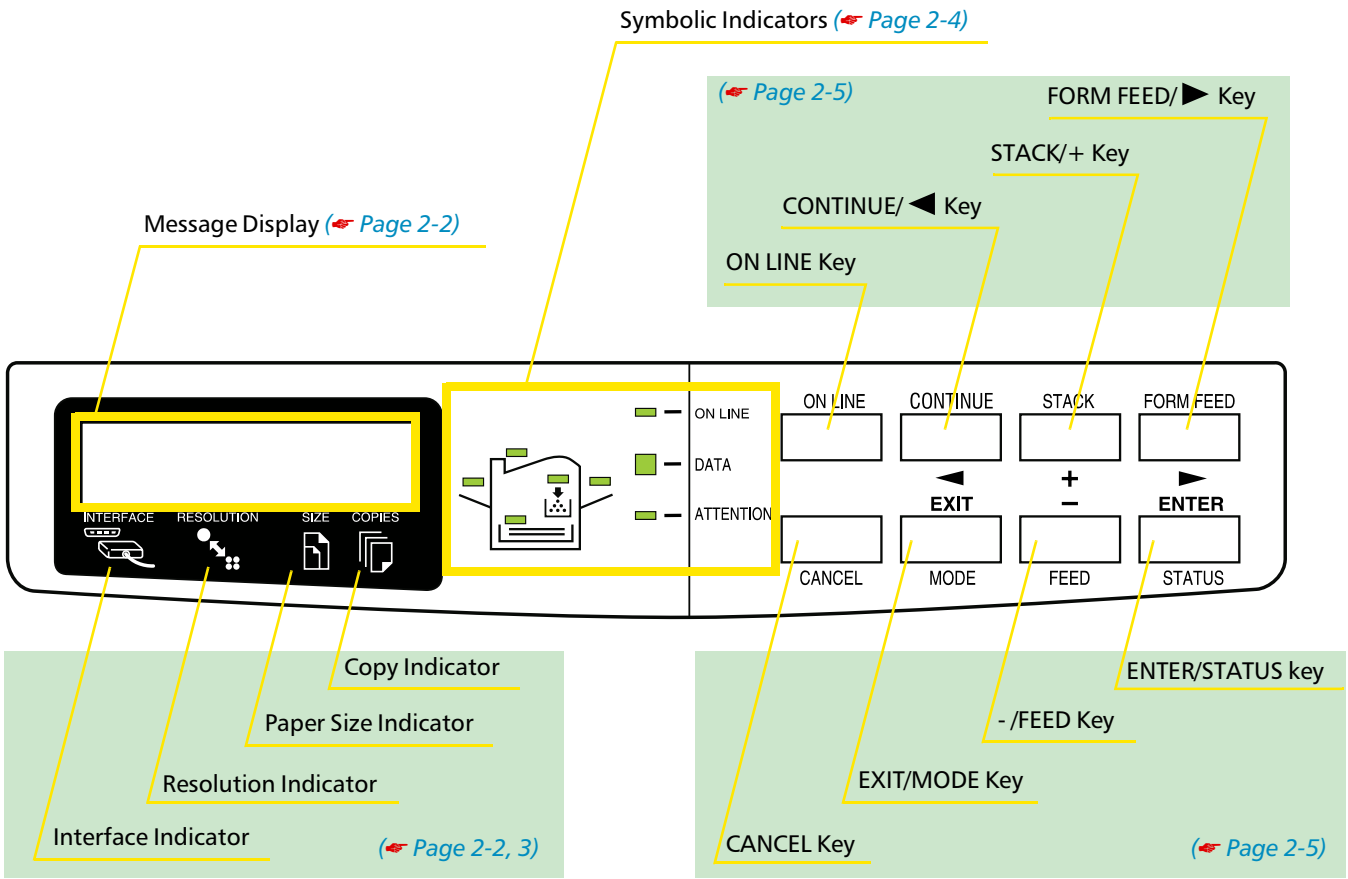
1. Make sure the power switch is off. Plug the power cord into the printer and turn power on.
2. When the printer is on-line, press the **STATUS** key.
3. If the installation has been successful, the amount of memory shown on the status page will correspond with the amount of expanded memory. (The factory installed memory size is 8 MB for the FS-1750 and 16 MB for the FS-3750.)

Chapter 2
Operating the Laser Printer

This chapter explains the printer's control panel and operating procedures. It covers the fundamental information you will need to use the page printer.

2.1. Control Panel

The printer control panel comprises a message display, keys, and indicators, as shown below.



Message Display

The message display gives information in the form of short messages. The six messages listed below are displayed during normal warm-up and printing.

Message	Meaning
Self test	The printer is self-testing after power-up.
Please wait	The printer is warming up and is not ready.
Ready	The printer is ready to print.
Processing	The printer is receiving data, generating graphics, reading an memory card, or printing.
Waiting	The printer is waiting for a command that says the job is over before printing the last page. Pressing the **FORM FEED** key allows you to obtain the last page immediately.
Sleeping	The printer is in Sleep mode. The printer wakes from Sleep mode whenever a key on the control panel is pressed, the cover is opened or closed, or data is received. The printer then warms up and goes online. (The time that it takes the printer to enter Sleep mode depends on the Sleep Timer setting.)
Cancelling data	Data inside the printer is being canceled.
FormFeed Time Out	The printer prints the last page after a waiting period.

Other messages appear when the printer needs the operator's attention as explained in *Chapter 5*.

Interface Indicator

The interface indicator shows which of the printer's interfaces is currently active. It uses the following abbreviations:

PAR Standard bi-directional parallel interface
SER Serial interface (RS-232C/RS-422A)
OPT Optional interface

The PAR, SER, or OPT indicator flashes when the printer is receiving and has received all the data, and then remains on.

Resolution Indicator

This shows the current printing resolution. The resolutions below can be switched on the control panel. The default is 1200 dpi (Fast 1200 mode) in the PCL 6 and KPDL emulation mode and 300 dpi in other emulation modes. The printer's resolution can be selected using the printer's control panel (See the last page in this manual.). For 1200 dpi, there are two modes, Fast 1200 mode and Fine 1200 mode. See *Mode Select Menu* at the end of this manual.

300 Print at 300 dpi.
600 Print at 600 dpi.
1200* Print at 1200 dpi (Fast 1200 mode) (Default).
1200 Print at 1200 dpi (Fine 1200 mode).

Paper Size Indicator

This is the paper SIZE indicator which indicates:

- the size of the current paper cassette (letter size for the U.S.A. and A4 for European countries).

The following abbreviations are used to indicate the paper sizes.

A4	ISO A4 (21 cm × 29.7 cm)	DL	ISO DL (11 × 22 cm)*
A5	ISO A5 (14.8 cm × 21 cm)	C5	ISO C5 (16.2 × 22.9 cm)*
A6	ISO A6 (10.5 cm × 14.8 cm)**	b5	ISO B5 (17.6 × 25 cm)**
B5	JIS B5 (18.2 cm × 25.6 cm)	EX	Executive (7-1/4 × 10-1/2 inches)**
B6	JIS B6 (12.8 cm × 18.2 cm)**	#6	Commercial 6-3/4 (3-5/8 × 6-1/2 inches)*
LT	Letter (8-1/2 × 11 inches)	#9	Commercial 9 (3-7/8 × 8-7/8 inches)*
LG	Legal (8-1/2 × 14 inches)	HA	Japanese Postcard (10 × 14.8 cm)*
MO	Monarch (3-7/8 × 7-1/2 inches)*	OH	Return Postcard (20 × 14.8 cm)*
BU	Business (4-1/8 inches)*	CU	Custom Size (14.8 × 21 cm to 21.6 × 35.6 cm)

* with only the MP tray feeding or optional envelope feeder (EF-1) installed.
** with only the MP tray feeding.

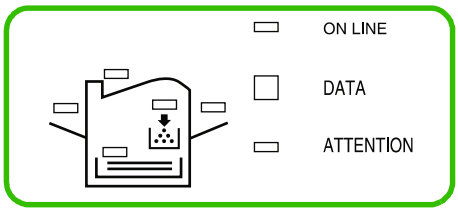
While the printer is Processing data to print, the SIZE indicator indicates the paper size selected by the application software.

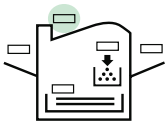
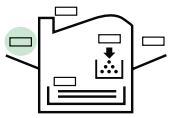
Copy Indicator

Indicates the number of copies set in the current interface (1-999), and the number is reduced as printing proceeds.

Symbolic Indicators

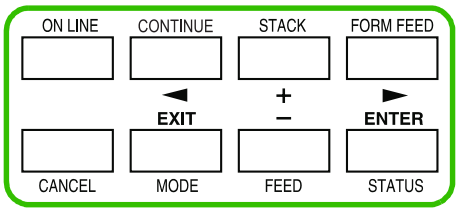
The symbolic indicators light during normal operation and when the printer needs attention.



Indicator	Name	Description
	Face-down stack indicator	**Flashing:** Indicates the possibility that paper may be jammed at this point, open and remove any jammed paper. See *Section 5.6*. **Lit:** Indicates when printed pages are delivered to the face-down output tray.
	Face-up stack indicator	**Flashing:** Indicates the possibility that paper may be jammed at this point, open and remove any jammed paper. See *Section 5.6*. **Lit:** Indicates when printed pages are delivered to the face-up output tray, or to the option stacker if installed.
	Toner indicator	**Flashing:** Indicates there is insufficient toner. **Lit:** Indicates that the printer is out of toner. Replace with a new toner container. See *Section 4.1*.
	Cassette feed indicator	**Flashing rapidly:** Indicates the possibility that paper may be jammed at this point, open and remove any jammed paper. See *Section 5.6*. **Flashing slowly:** Indicates that the printer is out of paper. Load more paper. **Lit:** Indicates when paper is fed from the paper feed cassette.
	MP tray indicator	**Flashing rapidly:** Indicates the possibility that paper may be jammed at this point, open and remove any jammed paper. See *Section 5.6*. **Flashing slowly:** Indicates that the printer is out of paper. Load more paper. **Lit:** Indicates when paper is fed from the MP tray, or the option envelope feeder if installed.
ON LINE	On-line indicator	Flashes when a memory error has occurred. (See *Table 5.3*.) Lights when the printer is on-line. The printer prints received data. Goes off when the printer is off-line. The printer stores but does not print received data.
DATA	Data indicator	**Flashing:** Indicates data transfer is taking place. **Lit:** Indicates either that data is being processed, or that data is being written to the memory card.
ATTENTION	Attention indicator	**Flashing:** Indicates when the printer needs maintenance attention or the printer is warming up (`Please wait`). Read the message on the message display and consult *Chapter 5*. **Lit:** Indicates when a problem or an error occurs which may be cleared by the user. (For example, the paper feed cassette is empty.) Read the message in the message display and consult *Chapter 5*.

Control Keys

The control panel keys are used to configure the printer.



☛ **Settings made with these keys effect only the interface currently in use.**

Key	Function
ON LINE	Switches the printer on-line and off-line.
CONTINUE ◄	1. Depending on the message being indicated, there are cases where operation will continue after pressing the **CONTINUE** key. If such a message is displayed, operation will be resumed after pressing this key. (See *Table 5.3*) 2. Used as the ◄ key in the mode selection function.
STACK +	1. Selects whether printed pages are delivered to the face-down, face-up tray, or optional sorter/stacker (if installed). 2. Lets you access the desired item or enter numeric values. In some of the control procedures, the ◄ (**CONTINUE**) and ► (**FORM FEED**) keys are used to enter or exit the sub items.
FORM FEED ►	1. Prints and feeds out one page. 2. Used as the ► key in the mode selection function.
CANCEL	Abandons a printing job, resets numeric values, or cancels a setting procedure.
EXIT **MODE**	1. When pressed during mode selection, terminates the setting and returns to the Ready condition. 2. Used to select the emulation, font, character code set; to read an memory card and others (See *Section 2.3* and the last page in this manual.).
– **FEED**	1. Enables access to the desired item or entering of numeric values. In some of the control procedures, the ◄ (**CONTINUE**) and ► (**FORM FEED**) keys are used to enter or exit the sub items. 2. Selects the cassette feed or MP tray feed.
ENTER **STATUS**	1. Finalizes numeric values and other selections. 2. Prints a page of status information on all interfaces together (The printer must be on-line.).

☛ **Most of the panel functions can also be controlled by PRESCRIBE 2e commands or commands generated by application software. The printer obeys the most recently received printer settings sent from the application software, or from the printer driver, which take priority over control panel settings.**

2.2. Operating Procedures

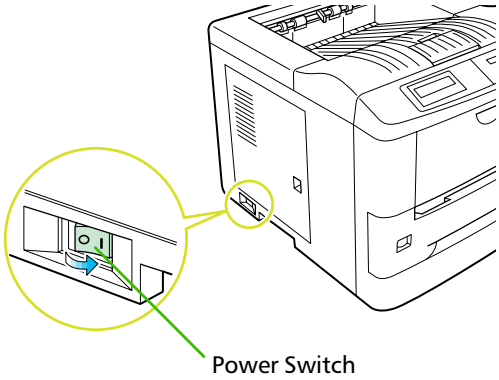
Switching Power On

Check that the power cord is securely plugged in at both ends.

Check that the printer is connected to the computer. In switching power on, the general rule is to switch on printer power first, computer power second.

1. Push the power switch to the ON (|) position.
2. Wait for the printer to warm up. During warm-up the message display indicates `Self test`.

At the end of the warm-up period, the ON LINE indicator lights, and the message display indicates `Ready`. The printer is now ready to print.

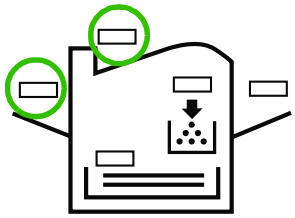


Stack Selection

The **STACK** key selects the tray to which the printed pages are delivered. The **STACK** key can be used whenever the message display indicates `Ready`.

Press the **STACK** key. The selection toggles and is momentarily displayed in the message display as:

```
Face-up tray
Face-down tray
```



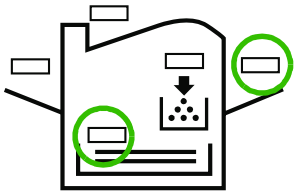
If you have installed the optional sorter or stacker, `Sorter` or `Bulk stacker` will also be displayed.

The current selection is indicated by a green light on the printer symbol above the key.

Also, if the printer is being used with the optional sorter or stacker, the destination of the paper from each can be selected.

Feed Selection

The **FEED** key selects the paper feed cassette [`Cassette`] or MP tray [`MP tray`] (or the option paper feeder[s], if installed) as the paper source. The **FEED** key can be used whenever the message display indicates `Ready` or `Add paper`.



Press the **FEED** key. The selection cycles and is momentarily displayed in the message display as:

```
Cassette
 (paper size) (paper type)
MP tray [MP tray mode]
 (paper size) (paper type)
```

If you have installed the optional paper feeder, the cassette in the printer appears on the display as `Cassette 1`, and the cassettes in the paper feeder appear as `Cassette 2` and `Cassette 3`.

Also, if the Envelop Feeder or Bulk Feeder is installed then MP tray is not displayed and `EF` or `Bulk feeder` is displayed instead.

The current selection is indicated by a green light on the printer symbol above the key.

On-line/Off-line Setting

By pressing the **ON LINE** key you can change the printer between the on-line state, in which it prints the data it receives from the computer, and the off-line state, in which it stores the data for printing later.

1. Make sure that the message display indicates `Ready`.
2. Press the **ON LINE** key.

If the printer is on-line, it changes to off-line. If the printer is off-line, it changes back to on-line.

The ON LINE indicator lights when the printer is on-line.

Going off-line may or may not halt communication between the printer and computer, depending on details of the current interface. While off-line, the printer continues to accept any data that arrives until the current interface buffer is full, at which point it instructs the computer to stop sending data. Data stored while off-line are printed when the printer is returned to the on-line state.

Canceling Printing

Perform the following procedure when you wish to cancel printing after it has begun.

1. Check if the message `Processing` is displayed in the message display.
2. Press the **ON LINE** key to take the printer offline.
3. Perform the necessary procedure on the computer to halt printing.
4. Press the **CANCEL** key.
5. The message `Print Cancel?` will appear in the message display and the interface to be canceled will be displayed.

   `Parallel`
   `Serial`
   `Option` (appears only when an optional interface is installed)

6. Selecting the interface to cancel using the + or – key and then press the **ENTER** key. Printing from the interface selected will be stopped.

   A few pages may be printed even after the **CANCEL** key is pressed as remaining data received before the **CANCEL** key was pressed is printed.

   The message `Print Cancel? Current job` will also be displayed when the **CANCEL** key is pressed for the purpose of stopping the printing of status pages or font lists from the control panel. When the **ENTER** key is pressed, the message `Cancelling data` appears in the message display and printing stops after the printer finishes printing the current page.

   Press the **CANCEL** key again if you wish to stop the cancellation of printing.

   Press the **ON LINE** key to put the printer back online to continue with other print jobs.

- **Canceling data from the computer using the CANCEL key will restore temporary settings to their default values. (The same status resulting from executing the PRESCRIBE 2e RES command.)**
- **It is impossible to cancel printing of just one side when printing in duplex mode using an optional duplexer (DU-21).**

Status Printout

If you want to check the printer's current status, including memory available, and option settings, you can find the information you need on the status page. To print out a status page, the printer must be on-line. Proceed as follows:

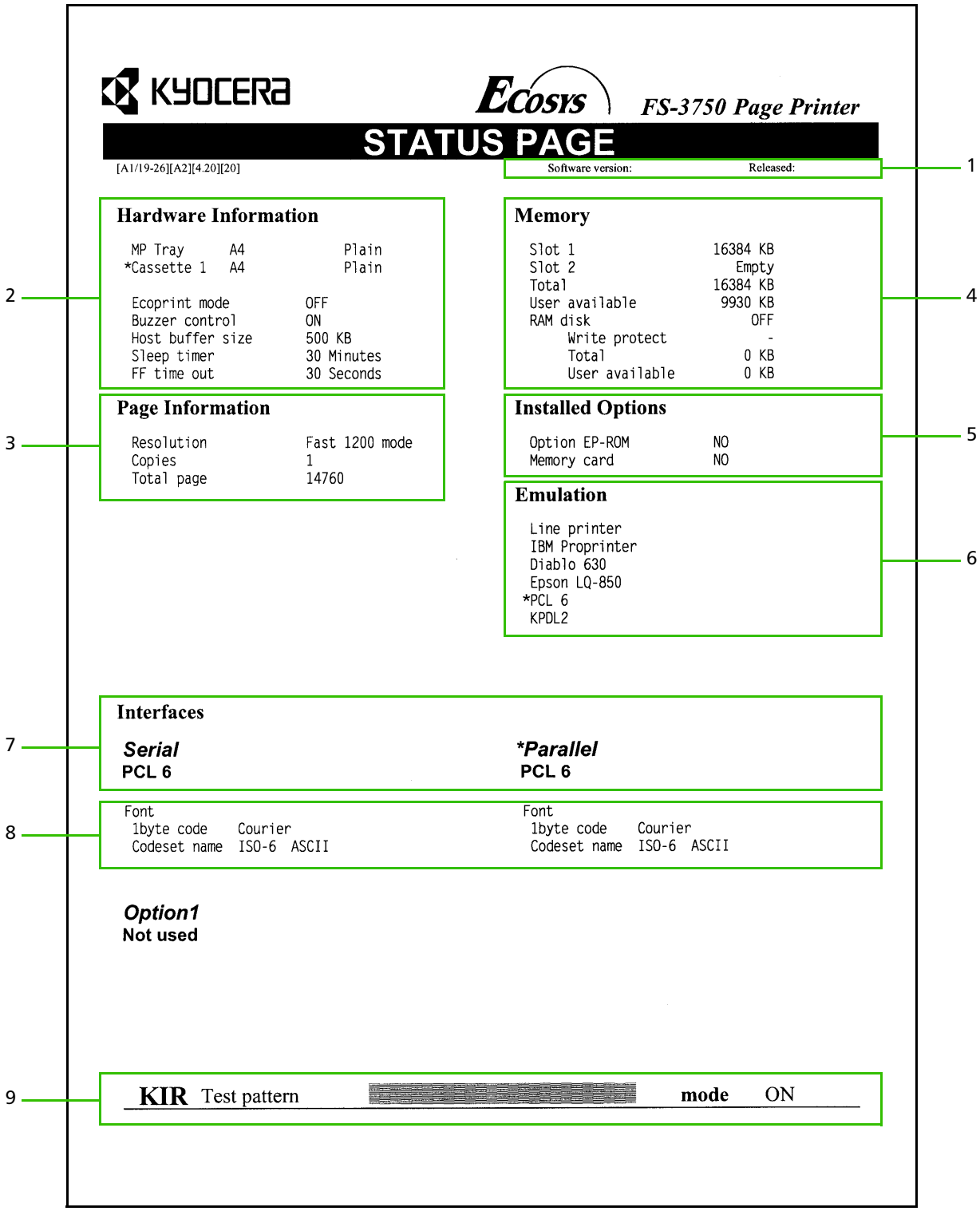
1. Make sure the message display indicates Ready.
2. Press the **STATUS** key. The printer prints a page of status information.

The message display indicates Processing during printing of the status page, then returns to Ready.

For a full description of the status page, see next page.

☛ **Items and values on the status page may vary depending on the printer model and printer's firmware version.**

Sample Status Page



1 — Software version

This information shows the software version and date of issue of the printer.

2 — Hardware information

This information shows the currently selected paper feed source (indicated by an asterisk), paper size, and main settings of the printer.

3 — Page information

This information shows the currently selected resolution and number of copies.

4 — Memory usage

This information shows the amount of total memory installed in the printer and the amount of currently available memory.

5 — Installation Options

This shows the options currently installed in the printer.

6 — Emulation

This shows all available emulations and the currently selected emulation (marked with an asterisk). The printer is shipped from the factory set to PCL 6 emulation.

7 — Interface information

This information shows all interfaces installed in the printer and the currently selected interface.

8 — Fonts at startup (for each interface)

This shows the font automatically selected when the printer starts up (default font). It is possible to set different fonts for the parallel interface and the serial interface. The figure on *page 2-9* shows default settings. The font is set to Courier font (font number: I000).

This also shows font information similar to the column below if an optional interface is installed.

9 — KIR test pattern

This is used when setting the printer's KIR mode. For details, see *page 2-24*.

Form Feed

Depending on the software, the message `Waiting` may be displayed in the message display when you get to the end of a print job. This occurs when the software does not issue a final form feed to the printer indicating the end of the print data. If you wait awhile, `FormFeed TimeOut` will be displayed and the last page will be printed automatically. Pressing the **FORM FEED** key allows you to finish printing immediately.

1. Check if the message display reads `Waiting`.
2. Press the **FORM FEED** key. The message display will now read `Processing` and the last page will print.

☛ **The `Waiting` display may also appear due to interruptions in printed data while the computer is processing data. Pressing the FORM FEED key unnecessarily when the message display reads `Waiting` will result in a form feed.**

2.3. Using the Mode Select Menu

This section explains how to use the **MODE** key on the control panel. The **MODE** key allows you to set or change the printer environment such as the number of copies to make, emulation, page orientation, code set, etc. to your specific needs.

The following items can be selected by using the **MODE**, **+** and **–**, and **ENTER** keys. Also, the diagram on the last page in this manual gives a quick reference to the full options and the sequence of selection.

Mode Select Menu

Item	Function	Default Setting
Print Menu Map	Prints a menu map with the current settings on it.	—
Interface >	Selects the interface on which the control panel settings are effective. This setting affects only the currently active interface. Parallel setting has a sub item in which one of four data transmission modes can be selected — Nibble (high), Auto, Normal, or High speed Serial setting has five sub items, and sets the following RS-232C/RS-422A parameters: Baud rate Data bits Stop bits Parity Protocol If an optional network board is installed, also makes the network settings.	Parallel Auto 9600 8 1 None DTR(pos.)&XON
Emulation >	Changes the emulation mode on the current interface. The ► key allows access to sub item >Code set. Also with KPDL emulation, print settings can be made when there is an error or alternative emulation.	PCL 6
Font >	Select the current interface font. The default number for selecting an internal font is I000 (this is the number for Courier). If there are optional fonts in the printer other than the internal ones, you can specify them by switching to the Option display. Depending on the type of optional font, the symbols used at the start of the font number change as follows: Soft font (Download): S Fonts resident in a Memory Card: M Fonts resident in a RAM disk: H Fonts resident in an optional ROM: O This menu also allows printing the font lists, selecting Courier, Letter Gothic, and selecting the size and pitch of the font.	Internal I000 (Courier)

Item	Function	Default Setting
Page set >	Press the ► key to set the following page printing method. Number of copies Page orientation Page protect LF action CR action Wide A4	 001 Portrait Auto LF only CR only Off
Print quality >	Press the ► key to set the following print quality. KIR mode Ecoprint mode Resolution Print density	 On Off Fast 1200 mode 03
Opt. ROM >	Reads information from the option ROM installed in the printer's main board.	—
RAM DISK mode >	The following settings can be made from sub-menus when the total printer memory is 12 MB or more and this mode is set to On.	Off
MEMORY CARD >	Reads or writes data from or to an memory card in the printer's memory card slot. Also, this menu allows deletion of data from an memory card; and formatting the memory card.	—
Paper handling >	The following operations can be performed from sub-menus on paper type. MP tray mode Paper size for MP tray Paper type for MP tray Paper size for optional envelope feeder Paper type for optional envelope feeder Paper size for optional bulk feeder* Paper type for optional bulk feeder* Cassette size for custom sizes Paper type for Cassette 1-3 Duplex printing mode* Optional sorter mode* Override A4/Letter Set up the custom paper type Reset the custom paper type	 First A4 or Letter Plain DL or Business Envelope A4 Plain 216 mm × 356 mm Plain None Stacker Off — —
Others >	The following sub-menus can be displayed by pressing the ► key and then the + and – key Message language setting Automatic form feed timeout setting Sleep timer setting [See *page 2-22*.] Receive data damping [See *page 2-23*.] Printer reset Display total number of printed pages Resource setting Alarm (buzzer) setting Service (for service personnel)	 English 30 sec. 30 min. — — — Off On —

/*: These items are available only when the printer is installed with the applicable option unit/kit.

For items with the > mark on the message display, the ► (**FORM FEED**) key lets you go down to the sub items which give access to more items to change the relevant settings.

2.4. Configuring Interfaces

The printer is equipped with both a parallel and serial interface. Independent settings can be made for each interface. Optional interface can also be installed.

To configure each interface, press the **MODE** key and use the + or – key to select the interface you wish to make settings for.

☛ **This interface selection does not select which interface data will be received from. The printer automatically selects that interface.**

Parallel Interface

The parallel interface mode of this printer supports a bi-directional/high-speed mode. Normally, this interface is used under the default setting Auto, see *Appendix C*. After setting the interface, be sure to reset the printer or turn the power off at least once. The new setting will be enabled thereafter.

2.5. RAM DISK

A RAM DISK can be set up as a virtual media device by setting a given amount of the total printer memory as the RAM DISK. (This is only available for the FS-1750 when the printer's memory has been expanded to 12 MB or more.) By setting up a RAM DISK electronic sorting can be done. (This cuts down the total time of printing.) Note however that data written to the RAM DISK is lost if the power to the printer is turned off or the printer is reset. RAM DISK settings can be made from the printer's control panel.

☛ **The RAM DISK is set from the printer's user memory. The printer's printing speed may therefore drop or insufficient memory errors result depending on the value of the RAM DISK setting.**

Setting the RAM DISK Size

1. Press the **MODE** key.
2. Press the + or – key and select `RAM DISK mode >`.
3. The default setting is `Off`. Pressing the **ENTER** key will cause a `?` to flash. Press the + or – keys to display `On` and then press the **ENTER** key.
4. Press the ► key to display `>RAM DISK size`.
5. Press the **ENTER** key again, and change the RAM DISK size using the + or –key. It is not possible to make a setting that exceeds total printer memory. The default value for the RAM DISK is the total printer memory minus 9 MB. This parameter may be set anywhere from `01` to `63` depending on the available printer memory. Press the **EXIT** key if you want to cancel the setting.
6. Once the desired RAM DISK size is displayed, press the **ENTER** key.
7. Press the **EXIT** key. Then turn the printer's power off and on again. The setting will be activated after restart.

RAM DISK Operations

The following operations are available with the RAM DISK.

- Read Data
- Write Data
- Delete Data
- Print a List of Data Names

Procedures for all operations are the same as for a memory card. Please see the memory card item for the given procedure.

2.6. Operating a Memory Card

Hints on Writing Fonts to the Memory Card

Some memory card writer utility programs are available for writing data to the memory card. If you write fonts into a memory card, we recommend you write them as font data and not as host data. Fonts written in a memory card as font data are automatically loaded in the printer when it is switched on and are usable on all the printer interfaces simultaneously. The printer reads only the header part of these fonts into its memory and therefore these fonts do not occupy a large area in the printer's memory.

If you write the fonts in the memory card as host data, the fonts are transferred directly from the memory card into the printer's memory when the card is read. This may require extra memory to be installed in the printer as they usually occupy a great amount of the printer's memory. Moreover, use of the fonts is restricted on only the interface that was active during the fonts were read from the memory card.

To properly write font data into the memory card, refer to the memory card writer manufacture's instructions.

Reading Fonts/Data from a Memory Card

If the memory card is already inserted in the slot when the printer is powered on, the fonts are automatically read into the printer. To reread the fonts from a memory card, use the >Read fonts function.

☛ **The PRESCRIBE 2e FRPO I0 command specifies the name of the partition in the memory card to be read automatically at power up. See *PRESCRIBE 2e Programming Manual, Chapter 5*.**

Writing Data to a Memory Card

A memory card can hold up to 127 data partition names, depending on its capacity. When writing to the card, a name is assigned automatically. You can use the procedure later in this section to print a list of data names for confirmation.

☛ **You cannot write font data to a memory card with the printer.**

To write data to a memory card, proceed as follows.

First check that the memory card can be writable (that the memory card is properly formatted, not write-protected, and its internal battery is not exhausted, for example). Otherwise, the >Write data message to be explained below will not be shown on the message display.

☛ **If the card inserted in the memory card slot is not formatted, the >Format option will automatically appear on the display. Refer to *Formatting a Memory Card* which follows this section and format the memory card.**

1. With the message display showing >Write data, press the **ENTER** key. A blinking question mark will appear as follows:

   >Write data ?

2. Press the **ENTER** key. The message display changes to show Processing, then to Waiting. If you want to abandon writing, press the **CANCEL** key.

3. In this state, send the file from the computer to the printer as in the example below.

   Example:

   To send the file (data) *TEST.TXT* on drive C, enter the following at the DOS prompt (C:\):

   ```
   COPY TEST.TXT  PRN
   ```

   The file is written onto the memory card given a destination name (also referred to as a *partition name*) which the printer automatically assigns one after another as follows:

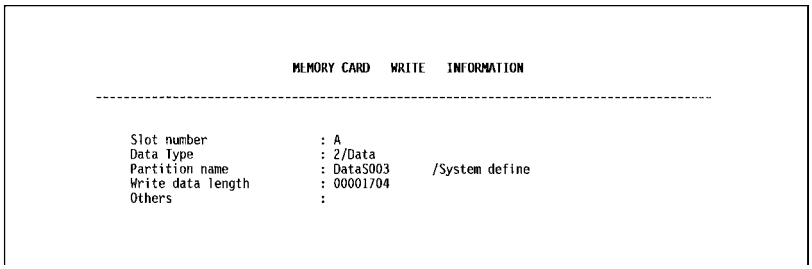
DataS001 (first data), DataS002 (second data), DataS003 (third data),
... DataS127 (last data)

In the example above, if the file *TEST.TXT* is the first data to be written onto the memory card, the destination name will be *DataS001*.

By using the PRESCRIBE 2e RWER W (write memory card) command to write data to a memory card, you can change the destination name to be the same as the original name or any other name you desire.

As the printer receives data, the message display changes to `Processing`, then when the end of the data is received, the message display changes to `Waiting`.

4. Check that the message display has changed to `Waiting`, then press the ► (**FORM FEED**) key. This writes the file to the memory card and instructs the printer to automatically print out a memory card write information page as shown below.



```
                    MEMORY CARD   WRITE   INFORMATION

-------------------------------------------------------------------------------

    Slot number             : A
    Data Type               : 2/Data
    Partition name          : DataS003      /System define
    Write data length       : 00001704
    Others                  :
```

Data type. Type of data written (currently only type 2 is supported).
Partition (data) name. The destination name of data written to the card.
Write data length. The size of the written data on the memory card in bytes.
Others. Error information.

When the memory card write information page is printed, the message display returns to `Ready`.

If the writing was not completed successfully, an error code appears on the message display. For details, see Section *5.5 Indicators and Messages*. If this happens, press the **CONTINUE** key. The message display returns to `Ready`.

5. Repeat above steps until you have transferred all data (files) that you want to write to the memory card. Each time you finish writing data, a memory card write information page is printed from the printer showing the information explained in step 4 above, but pertaining only to the data just written. To see all data contained in the memory card at once, print a list of data names as explained on the last page of this manual.

Deleting Data from a Memory Card

It is possible to use the printer to delete data from a memory card one by one.

First check that the memory card is writable (for example that the memory card is not write-protected, data exists on the card, and its internal battery is not exhausted). Otherwise, the `>Delete data` menu will not be shown on the message display.

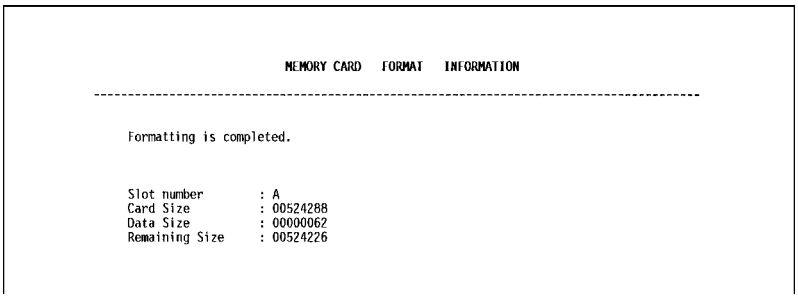
Formatting a Memory Card

Formatting allows data to be written to the card. A new memory card must be formatted before it can be used in the printer.

☞ **Formatting destroys any existing data on the memory card.**

First check that the memory card is writable (for example that the memory card is not write-protected, and its internal battery is not exhausted).

When the formatting operation is successfully completed, the printer automatically prints out a formatting information page as shown below.

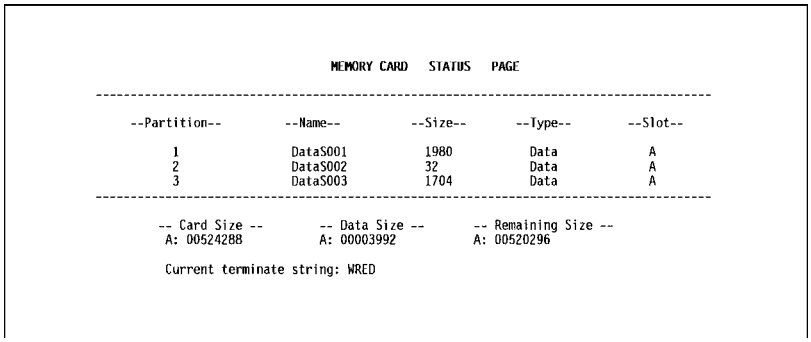


```
                    MEMORY CARD   FORMAT   INFORMATION
--------------------------------------------------------------------------------

    Formatting is completed.


    Slot number       : A
    Card Size         : 00524288
    Data Size         : 00000062
    Remaining Size    : 00524226
```

Card size. The total size of the memory card memory in bytes.
Data size. The size the printer uses for its system in bytes.
Remaining size. The size remaining in the memory card for storing data in bytes.

Printing a list of data names

The printer prints a list of all data names (referred to as *partitions*) stored in a memory card for reference. (Printing a list is also available for a font card.)



```
                    MEMORY CARD   STATUS   PAGE
--------------------------------------------------------------------------------
   --Partition--       --Name--        --Size--      --Type--       --Slot--

         1              DataS001         1980          Data           A
         2              DataS002         32            Data           A
         3              DataS003         1704          Data           A
--------------------------------------------------------------------------------

       -- Card Size --       -- Data Size --      -- Remaining Size --
        A: 00524288           A: 00003992          A: 00520296

        Current terminate string: WRED
```

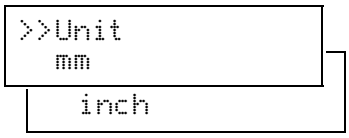
The printout (example above) includes the following information.

Partition (data) number. Reference number for each written data.
Name. The destination name of the written data as assigned automatically by the printer.
Size. The size of the written data in bytes.
Type. The type of the written data i.e., whether it is host data (Data) or font data (Font).
Card size. The total capacity of the memory card in bytes.
Data size. The total size of the data stored in the memory card in bytes.
Remaining size. The size of the capacity remaining in the memory card for storing further data, including the amount of memory that the printer uses for its system (approximately 70 bytes).
Current terminating string. The PRESCRIBE 2e command that terminates a writing operation when writing to memory card using the PRESCRIBE 2e RWER W command; usually WRED.

2.7. Setting Custom Sizes

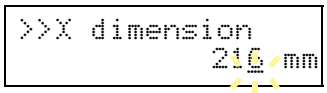
When setting sizes other than A5, A4, B5, Letter or Legal into the paper cassette, set the size of the paper to be used into the printer by the following procedure.

1. Display `Paper handling>` on the printer's display panel and press the ► key. Then use the + and – keys to display `>Cassette size>`.
2. By pressing the ► key `>>Unit` appears as shown in the diagram below (The unit of the paper length). You can select `mm` or `inch` by using the + and – keys.



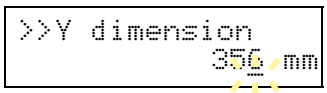
3. With the unit settings completed, `>>X dimension` appears as shown in the diagram below (the paper width setting). Press the **ENTER** key while in this state and the cursor begins to flash.

☛ **The width that can be set must be in the range of 148-216mm (5.83-8.5 inches).**



4. By pressing the + and – keys the numbers above the cursor change. By pressing the ◄ or ► keys the position of the cursor moves.
5. When you have input the desired custom size, press the **ENTER** key to complete the width setting.
6. With the width settings completed, press the + and – keys and `>>Y dimension` appears as shown below (the paper length setting). Set this in the same way as the width setting.

☛ **The length that can be set must be in the range of 210-356mm (8.27-14.02 inches).**



2.8. Setting the Paper Type

This printer is capable of printing under the optimum setting for the type of paper being used.

Setting the paper type for the paper source from the printer's control panel will cause the printer to automatically print in the mode best suited to that type of paper. This allows you to easily achieve high-quality printing results. A different paper type setting can be made for each paper source including the multipurpose tray. Not only can preset paper types be selected, but it is also possible for the user to define and select customized paper types.

The following types of paper can be set. For details on paper, please see *Appendix B*.

Cassette, Media Type and Custom Settings

Paper feed source / Paper Type	MP tray Bulk feeder	Cassette	EF (Envelope feeder)	Duplex path (MP tray available only in Cassette mode)
Plain	○	○	○	○
Transparency	○	×	×	×
Preprinted	○	○	○	○
Labels	○	×	○	×
Bond	○	○	○	○
Recycled	○	○	○	○
Vellum	○	×	×	×
Rough	○	○	○	○
Letterhead	○	○	○	○
Color	○	○	○	○
Prepunched	○	○	○	○
Envelope	○	×	○	×
Cardstock	○	×	○	×
Custom #*	○	○	○	○

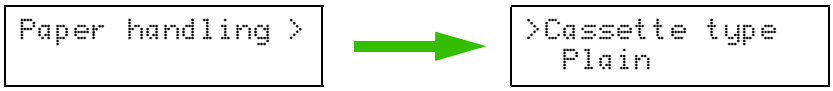
○: Can be stored ×: Cannot be stored

*: This is a paper type defined and registered by the user. Up to eight types of user settings may be defined. A number from 1 to 8 is used in place of the #. For details on setting user types, please see *page 2-20*.

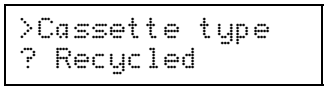
Making Settings

The following describes the procedure for setting the paper type using the Recycled type and Cassette as examples.

1. Display `Paper handling >` on the printer's Mode Select Menu and press the ► key. Then use the + and – keys to display the `Cassette type`.



2. Pressing the **ENTER** key will cause a `?` to flash. Press the + and – keys to display `Recycled`.



Press the **CANCEL** key if you want to cancel the setting. The `?` display will disappear.

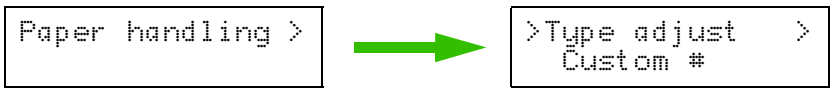
3. Pressing the **ENTER** key will cause the `?` to disappear. Pressing the **EXIT** key will exit the setting.

The same procedure can be used to set the paper type for other paper sources.

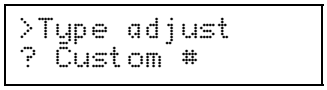
Paper Type User Setting

The following describes the procedure used to set a user-defined paper type for the printer. Eight custom user settings may be registered. After having been set, any of these may be called up when setting the paper type for a paper source.

1. Display `Paper handling >` on the printer's Mode Select Menu and press the ► key. Then use the + and – keys to display `>Type adjust`.



2. Pressing the **ENTER** key will cause a `?` to be displayed. Press the + and – keys to select the paper type (see *page 2-19*) that you want to customize and then press the **ENTER** key.



☛ **Note that if you change the setting for a paper type other than `Custom 1` through `8` the paper type setting for each paper source set to that paper type will be changed.**

3. Press the ► key after selecting the paper type you want to customize. Pressing the + and – keys will cycle through a display of the submenus given in the table below.

Submenus displayed	Selection parameters	Description
>>Paper weight	Normal (default) Heavy (Thick)	Sets the paper thickness
>>Duplex path (only when the paper type is Custom #)	Enable (default) Disable	Selects duplex printing on/off when an optional duplexer is installed (setting active only for the selected paper type)

Display the submenu to be set and press the **ENTER** key. A ? will flash. Press the + and – keys to select the desired parameter.

```
>>Paper weight
? Normal
```

(Example: Setup menu for Paper weight)

Press the **CANCEL** key if you want to cancel the setting. The ? will disappear.

4. Pressing the **ENTER** key will cause the ? to disappear. Pressing the **EXIT** key will exit the setting.

The same procedure can be used to set the parameters on other submenus.

Note that the setting status for paper weight and fuser mode used for each paper type is as given in the table below. In addition, all paper type settings made using Type adjust can be reset to the default values shown in the table below using the >Reset type adjust menu.

		Paper Type													
		Plain	Trans-parency*	Pre-printed	Labels**	Bond	Recycled	Vellum*	Rough**	Letter-head	Color**	Pre-punched	Enve-lope**	Card stock**	Custom
Paper weight	Normal	○	×	○	○	○	○	○	○	○	○	○	○	×	○
	Heavy (Thick)	×	○	×	×	×	×	×	×	×	×	×	×	○	×

*: These cannot be selected when the paper source is EF-1.

**: These paper types will cause slower printing when the paper is fed from the MP tray.

2.9. Sleep (Ecopower) Mode

The printer has a sleep timer to conserve power when the printer is not printing, processing, or receiving data. You can adjust the timer value, the length of time the printer waits before entering sleeping mode in the absence of data.

Any value from 0 to 120 [minutes] (the factory setting is 30 [minutes]) can be entered in 5-minute increments. You can use the ◄ or ► key to move the cursor back and forth through the figures to rapidly set a large value.

If the printer receives no data for the period adjusted as above, it times out and enters into sleeping mode, indicating `Sleeping` on the message display. When you send data for printing to the printer again or press a key on the control panel, the printer starts warming up, indicating `Please wait`, and becomes ready and on-line.

Opening and closing the printer's top cover or drawing out and closing the current paper cassette also awakens the printer to start warming up and become ready.

The printer also enters into sleeping mode if it times out while MODE SELECTing, or requesting the addition of paper or toner, indicating the appropriate maintenance message on its message display.

☛ **The printer environment last set is still maintained even though all indicators are out while the printer is in `Sleeping` mode.**

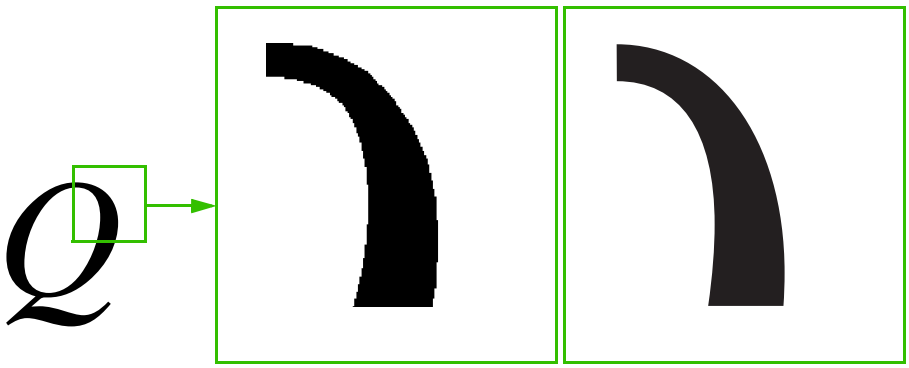
2.10. Dumping Received Data

It is possible to print data received by the printer as hexadecimal code for the purposes of debugging programs and files.

1. Pressing the **ENTER** key once while >Print HEX-DUMP is shown on the message display will cause a ? to display.
2. Pressing the **ENTER** key once again, Processing will be shown for a second then the message Waiting will appear on the message display.
3. Send data to be dumped to the printer. The message Processing will be displayed during receiving the data. Once the dumped data you require has been output, it is possible to cancel the printing of any further dumped data by taking the printer offline by pressing the **ON LINE** key and then pressing the **CANCEL** key.
4. Once all data has been received, the message Waiting will appear. Press the **FORM FEED** key to finish printing.

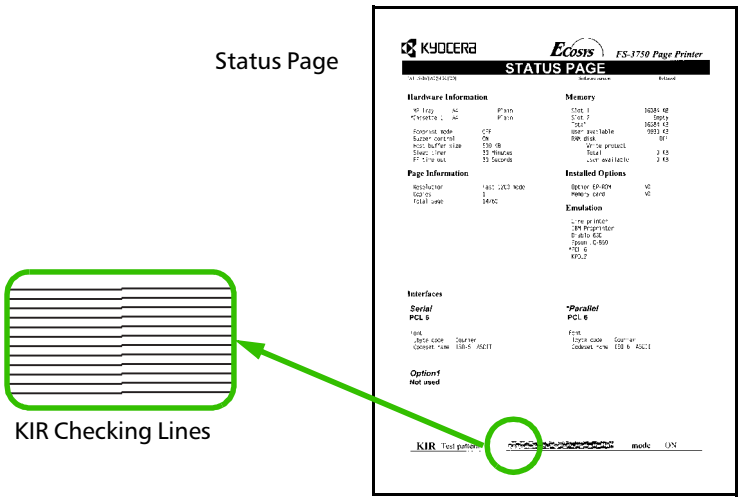
2.11. KIR 2 Level

This printer incorporates the KIR 2 (Kyocera Image Refinement 2) smoothing function. At resolutions of 600 dpi and 300 dpi, this function provides high print quality by providing software enhancement of print resolution. The function does not operate at 1200 dpi because that is the maximum resolution attainable by the print engine.). KIR 2 provides high quality printing by providing a software-type improvement to the resolution.



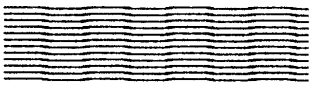
☛ **Set the print density to 03 when setting the KIR 2 mode. For details on print density, see *page 2-26*.**

You can look at the check line, the last line on a status page, to make the optimum KIR 2 mode setting.



Optimized stripes

The current KIR setting is optimal.



Dark vertical stripes

Set the KIR mode to Off. Try printing the status page again. If you still get dark vertical stripes, adjust the print density control to a lighter setting. (See the last page in this manual.)

White vertical stripes

Set the KIR mode to On. Try printing the status page again. If you still get white vertical stripes, adjust the print density control to a darker setting. (See the last page in this manual.)

2.12. Ecoprint Mode

The Ecoprint enables you to reduce the amount of toner consumed on the page so as to save your printing costs. You can set to Ecoprint mode on, as follows. (The factory-setting is Off.)

The Ecoprint mode setting is On when the printing image becomes lighter, yet very readable.

☞ **The Ecoprint setting has no effect on the print speed.**

Ecoprint setting is Off (default).

Ecoprint setting is On

2.13. Resource Protection

When you switch from the HP LaserJet emulation to another, all downloaded fonts and macros are lost. Resource protection preserves these PCL resources in memory so that they are intact when you change the emulation back to PCL 6.

By using the printer's MODE SELECT, you can select from two resource protection modes as follows:

```
>Resource prot.
 Permanent
```

In this mode, the printer stores fonts, macros, symbol sets, etc. in memory that were downloaded as permanent PCL resources. All temporary resources are lost when the emulation mode is changed from PCL 6 to another or vice versa.

```
>Resource prot.
 Perm / Temp
```

In this mode, the printer stores both permanent and temporary resources when the emulation mode is changed from PCL 6 to another or vice versa.

☛ **Resource protection requires extra memory to store the downloaded fonts and macros. The total size of the printer memory recommended for using the resource protection option is affected by several factors. See section *1.7. Memory Expansion Installation*.**

2.14. Adjusting the Print Density

If necessary, the print density can be adjusted from the MODE SELECT MENU. Density can be adjusted in five steps from 01 (light) to 05 (dark). The factory setting is 03, and there is normally no need to alter this setting.

When using the KIR function, please use the "03" setting.

2.15. Setting the Audio Warning (Buzzer)

In addition to the message displayed when the paper supply is exhausted, or when paper jamming occurs, an audio warning is made to sound. This is useful, for example, when the printer is in a location some distance from the user.

The audio alarm is set to ON when leaving the factory. An audio alarm corresponding to the type of printer error will sound according to the table below. If the alarm is set to OFF, it is made not to sound.

Type of Error and Corresponding Audio Alarm (Buzzer)

Priority	Error Message	Alarm Frequency Short beeps: approx. 0.8 s Long beeps: approx. 0.4 s	Remarks
High	Replace Toner Clean printer	short beeps	—
	Replace waste- toner bottle	short beeps	—
	Clean printer Press CONTINUE	short beeps	—
	Paper jam	short beeps	—
	Face-down tray paper full	short beeps	*
	Paper path error	short beeps	**
	Option stacker paper full	short beeps	**
	Remove Opt. Stacker paper	short beeps	**
	Load MP tray	short beeps	—
	Memory overflow Press CONTINUE	short beeps	—
	Print overrun Press CONTINUE	short beeps	—
	KPDL error Press CONTINUE	short beeps	—
	MEMORYCARD err Press CONTINUE	short beeps	**
	RAM DISK error Press CONTINUE	short beeps	—
	Opt. ROM error Press CONTINUE	short beeps	**
	Set paper Press CONTINUE	short beeps	—
	Load Cassette	short beeps	—
Low	Add paper	long beeps	—

* Model FS-3750 only

** These error messages are displayed if the relevant option is fitted.

The alarm will continue to sound while the error condition continues (if the printer is in the sleep mode, the alarm will be silent for that period alone). The alarm will cease to sound, however, when the **CANCEL** key is pressed.

To rectify the various error conditions listed above, please refer to *Chapter 5* of this manual, or to the operating manuals accompanying the various optional equipment.

- **If you wish to cancel the data being processed while the audio alarm is sounding, press the CANCEL key twice. Firstly, the audio alarm will be turned OFF, and then the data processing will be canceled.**
- **After the audio alarm has been set to OFF, even if the PRESCRIBE 2e FRPO INIT command is executed, the printer will not return to the initial (ON) alarm setting. To set the audio alarm to ON, reset using the mode selector menu from the control panel.**

Chapter 3
Fonts

This chapter describes the types of fonts you can use with the printer, including the printer's internal fonts.

3.1. Internal Fonts

A font is a set of characters of a particular design. The design is referred to as a *typeface*. Several characteristics identify a font. These include the code set (For details on the code sets, please read the *Programming Manual* on the supplied CD-ROM.), spacing, pitch, height, style, stroke weight, and typeface family.

The printer has 80 PCL/PS compatible fonts and a bitmap font for a line printer loaded into it. Also fonts may be downloaded to the printer's memory from a memory card or disk. These fonts are referred to as downloadable or soft fonts. The printer accepts as many downloadable fonts as its user available memory permits.

3.2. List of Fonts

This section contains a full list of the printer's internal fonts. You can print the same font list from the printer by using the printer's control panel key. To print a list of fonts, refer to *Mode Select Menu, List of fonts*.

Internal Scalable and Bitmap Fonts

Font number	Font samples
0	This is a sample of Courier font.
1	This is a sample of CGTimes font.
2	**This is a sample of CGTimes-Bd font.**
3	*This is a sample of CGTimes-It font.*
4	***This is a sample of CGTimes-BdIt font.***
5	This is a sample of CGOmega font.
6	**This is a sample of CGOmega-Bd font.**
7	*This is a sample of CGOmega-It font.*
8	***This is a sample of CGOmega-BdIt font.***
9	*This is a sample of Coronet font.*
10	**This is a sample of Clarendon-Cd font.**
11	This is a sample of Univers-Md font.
12	**This is a sample of Univers-Bd font.**
13	*This is a sample of Univers-MdIt font.*
14	***This is a sample of Univers-BdIt font.***
15	This is a sample of Univers-MdCd font.
16	**This is a sample of Univers-BdCd font.**
17	*This is a sample of Univers-MdCdIt font.*
18	***This is a sample of Univers-BdCdIt font.***
19	This is a sample of AntiqueOlive font.
20	**This is a sample of AntiqueOlive-Bd font.**
21	*This is a sample of AntiqueOlive-It font.*
22	This is a sample of GaramondAntiqua font.
23	**This is a sample of Garamond-Hlb font.**
24	*This is a sample of Garamond-Krsv font.*
25	***This is a sample of Garamond-HlbKrsv font.***
26	*This is a sample of Marigold font.*
27	This is a sample of Albertus-Md font.
28	**This is a sample of Albertus-ExBd font.**
29	This is a sample of Arial font.
30	**This is a sample of Arial-Bd font.**
31	*This is a sample of Arial-It font.*
32	***This is a sample of Arial-BdIt font.***
33	This is a sample of TimesNewRoman font.
34	**This is a sample of TimesNewRoman-Bd font.**
35	*This is a sample of TimesNewRoman-It font.*
36	***This is a sample of TimesNewRoman-BdIt font.***
37	This is a sample of Helvetica font.

Font number	Font samples
38	**This is a sample of Helvetica-Bd font.**
39	*This is a sample of Helvetica-Ob font.*
40	***This is a sample of Helvetica-BdOb font.***
41	This is a sample of Helvetica-Nr font.
42	**This is a sample of Helvetica-NrBd font.**
43	*This is a sample of Helvetica-NrOb font.*
44	***This is a sample of Helvetica-NrBdOb font.***
45	This is a sample of Palatino font.
46	**This is a sample of Palatino-Bd font.**
47	*This is a sample of Palatino-It font.*
48	***This is a sample of Palatino-BdIt font.***
49	This is a sample of ITCAvantGardeGothic-Bk font.
50	**This is a sample of ITCAvantGardeGothic-Dm font.**
51	*This is a sample of ITCAvantGardeGothic-BkOb font.*
52	***This is a sample of ITCAvantGardeGothic-DmOb font.***
53	This is a sample of ITCBookman-Lt font.
54	**This is a sample of ITCBookman-Dm font.**
55	*This is a sample of ITCBookman-LtIt font.*
56	***This is a sample of ITCBookman-DmIt font.***
57	This is a sample of NewCenturySchoolbook-Rom font.
58	**This is a sample of NewCenturySchoolbook-Bd font.**
59	*This is a sample of NewCenturySchoolbook-It font.*
60	***This is a sample of NewCenturySchoolbook-BdIt font.***
61	This is a sample of Times-Rom font.
62	**This is a sample of Times-Bd font.**
63	*This is a sample of Times-It font.*
64	***This is a sample of Times-BdIt font.***
65	*This is a sample of ITCZapfChancery-MdIt font.*
66	Τηισ ισ α σαμπλε οφ Σψμβολ φοντ. (Symbol)
67	Τηισ ισ α σαμπλε οφ ΣψμβολΠΣ φοντ. (SymbolPS)
68	❄♒♓♦ ♓♦ ♋ ♦♋❍◘●♏ ◘➚ ♁♓■♑♌♓■♑♦ ➚◘■♦ (Wingdings)
69	✶❋❇▲ ❇▲ ❁ ▲❁❍❒●❄ ❑❄ ☆✶✣✺❁❒❄✤❇■❊✪❁▼▲ ❄❑ (ITCZapfDingbats)
70	**This is a sample of Courier-Bd font.**
71	*This is a sample of Courier-It font.*
72	***This is a sample of Courier-BdIt font.***
73	This is a sample of LetterGothic font.
74	This is a sample of LetterGothic-Bd font.
75	*This is a sample of LetterGothic-It font.*
76	This is a sample of CourierPS font.
77	**This is a sample of CourierPS-Bd font.**
78	*This is a sample of CourierPS-Ob font.*
79	***This is a sample of CourierPS-BdOb font.***
80	This is a sample of LinePrinterBM8.5-Roman font.

KPDL Fonts (1)

This is a sample of Albertus-ExtraBold font.
This is a sample of Albertus-Medium font.
This is a sample of AntiqueOlive font.
This is a sample of AntiqueOlive-Bold font.
This is a sample of AntiqueOlive-Italic font.
This is a sample of Arial font.
This is a sample of Arial-Bold font.
This is a sample of Arial-BoldItalic font.
This is a sample of Arial-Italic font.
This is a sample of AvantGarde-Book font.
This is a sample of AvantGarde-BookOblique font.
This is a sample of AvantGarde-Demi font.
This is a sample of AvantGarde-DemiOblique font.
This is a sample of Bookman-Demi font.
This is a sample of Bookman-DemiItalic font.
This is a sample of Bookman-Light font.
This is a sample of Bookman-LightItalic font.
This is a sample of CGOmega font.
This is a sample of CGOmega-Bold font.
This is a sample of CGOmega-BoldItalic font.
This is a sample of CGOmega-Italic font.
This is a sample of CGTimes font.
This is a sample of CGTimes-Bold font.
This is a sample of CGTimes-BoldItalic font.
This is a sample of CGTimes-Italic font.
This is a sample of Clarendon-Condensed-Bold font.
This is a sample of Coronet font.
This is a sample of Courier font.
This is a sample of Courier-Bold font.
This is a sample of Courier-BoldOblique font.
This is a sample of Courier-Oblique font.
This is a sample of CourierPCL font.
This is a sample of CourierPCL-Bd font.
This is a sample of CourierPCL-BoldItalic font.
This is a sample of CourierPCL-Italic font.
This is a sample of Garamond-Antiqua font.
This is a sample of Garamond-Halbfett font.
This is a sample of Garamond-Kursiv font.
This is a sample of Garamond-KursivHalbfett font.

KPDL Fonts (2)

This is a sample of Helvetica font.
This is a sample of Helvetica-Bold font.
This is a sample of Helvetica-BoldOblique font.
This is a sample of Helvetica-Narrow font.
This is a sample of Helvetica-Narrow-Bold font.
This is a sample of Helvetica-Narrow-BoldOblique font.
This is a sample of Helvetica-Narrow-Oblique font.
This is a sample of Helvetica-Oblique font.
This is a sample of LetterGothic font.
This is a sample of LetterGothic-Bold font.
This is a sample of LetterGothic-Italic font.
This is a sample of Marigold font.
This is a sample of NewCenturySchlbk-Bold font.
This is a sample of NewCenturySchlbk-BoldItalic font.
This is a sample of NewCenturySchlbk-Italic font.
This is a sample of NewCenturySchlbk-Roman font.
This is a sample of Palatino-Bold font.
This is a sample of Palatino-BoldItalic font.
This is a sample of Palatino-Italic font.
This is a sample of Palatino-Roman font.
Τηισ ισ α σαμπλε οφ Σψμβολ φοντ. (Symbol)
Τηισ ισ α σαμπλε οφ ΣψμβολΠΧΛ φοντ. (Symbol MT)
This is a sample of Times-Bold font.
This is a sample of Times-BoldItalic font.
This is a sample of Times-Italic font.
This is a sample of Times-Roman font.
This is a sample of TimesNewRoman font.
This is a sample of TimesNewRoman-Bold font.
This is a sample of TimesNewRoman-BoldItalic font.
This is a sample of TimesNewRoman-Italic font.
This is a sample of Univers-Bold font.
This is a sample of Univers-BoldItalic font.
This is a sample of Univers-Condensed-Bold font.
This is a sample of Univers-Condensed-BoldItalic font.
This is a sample of Univers-Condensed-Medium font.
This is a sample of Univers-Condensed-MediumItalic font.
This is a sample of Univers-Medium font.
This is a sample of Univers-MediumItalic font.
❄♒♓♦ ♓♦ ♋ ♦♋❍❑●♏ ❑♐ ♆♓■♑♎♓■♑♦🏳☼♏♑◆ (Wingdings-Regular)
This is a sample of ZapfChancery-MediumItalic font.
✶❊❉▲ ❉▲ ❁ ▲❁❍❒●❄ ❑❄ ✺❁❒❄✤❉■✳✪❁▼▲ ❄❑■▼✎ (ZapfDingbats)

Chapter 4
Maintenance

This printer is designed to provide years of trouble-free service without the necessity of printer module replacement. However, you must replace the toner container in the printer with a replacement container from a new toner kit. Also, to ensure good print quality, various parts inside the printer must be cleaned at regular intervals.

4.1. Toner Kit Replacement

The toner container in the printer should be replaced as soon as the message display shows `Toner low TK-20 Clean printer` or soon after. If you continue to use the printer, eventually the toner supply will be exhausted at which point the printer will stop printing and the `Replace Toner Clean printer` message will be shown instructing you to install a new toner kit.

Toner kit replacement interval

The life of the toner container will vary according to the density of print in your documents. If you print documents with an actual toner coverage of approximately 5% (with the Ecoprint mode* turned off), the toner container will need replacing approximately once every 10,000** pages (20,000 pages with the TK-20H).

* Turning the Ecoprint mode ON conserves toner. Refer to Chapter 2 for details.
** In the case of a new printer in which a toner kit has been installed for the first time, the number of pages that can be printed will be 6,000.

Toner Kit to be Used

The toner kit to be used with this printer is the TK-20/TK-20H. It contains the following:

- ❒ Toner container
- ❒ Waste toner bottle
- ❒ Wiper (lint-free) cloth
- ❒ Grid cleaner
- ❒ 2 plastic bags (for disposal of the old toner container and waste toner bottle)
- ❒ Instructions

(The kit supplied with the printer contains only the toner container and waste toner bottle.)

☛ **We strongly recommend you use only the original Kyocera toner kit. Use of original Kyocera toner assures the intended long term reliability of the printer.**

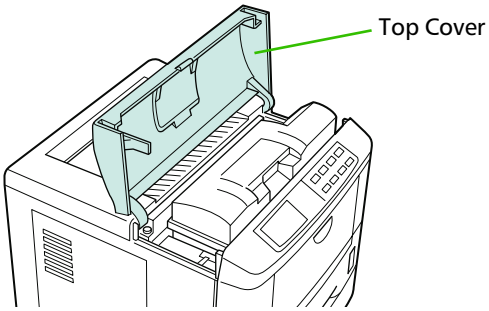
Supplying Toner

☛ **Before proceeding, take note of the following:**

- ◆ **Do not leave floppy disks etc. lying around while performing this maintenance procedure. This procedure tends to raise a little toner dust which can harm magnetic recording media.**
- ◆ **Do not attempt to reuse the waste toner remaining in the toner container.**
- ◆ **Use only the toner kit exclusively designed for the printer. Use of a toner kit intended for use with other printer models may damage the printer and void the warranty.**

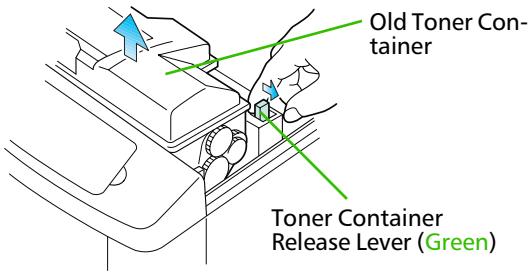
To replace the toner container, proceed as follows.

1. Open the printer's top cover all the way.



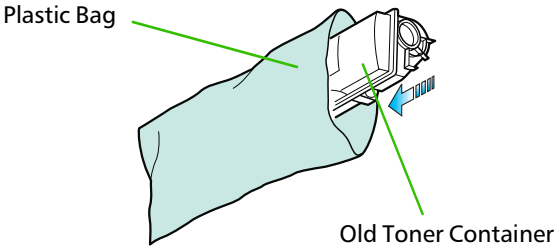
2. Press the toner container release lever (Green) to release the old toner container from the printer. Remove the old toner container as gently as possible.

☛ **Keep the toner container as level as possible while removing.**



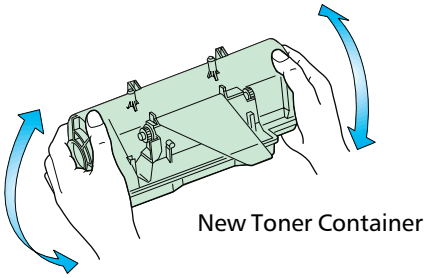
3. Put the old toner container in the plastic bag supplied with the toner kit. Dispose of the toner container.

☛ **The old toner container may be incinerated without the risk of generating harmful gas.**

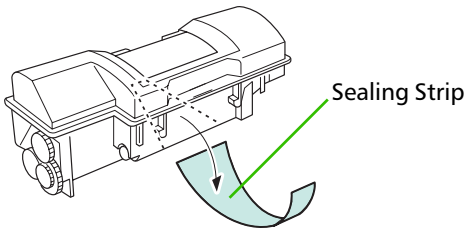


4. Take the new toner container from its bag.

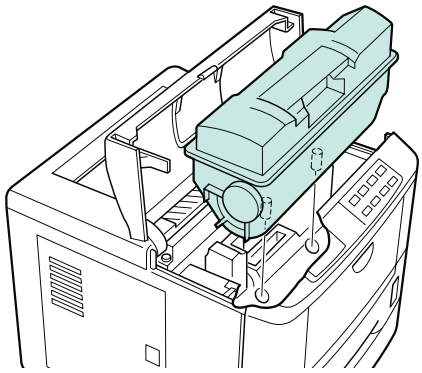
With the label side down, thoroughly shake the toner container (in the direction of the arrow) ten times or more to loosen and mix the toner inside.



5. The bottom of the toner container is sealed with a plastic strip. Carefully pull the sealing strip off the toner container, making sure not to leak any toner. Dispose of the sealing strip.

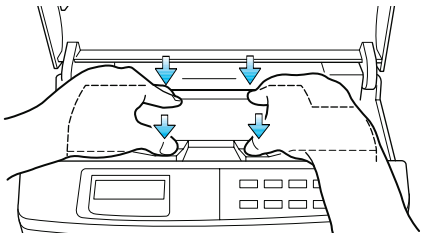


6. Install the toner container on the developer as shown in the diagram.

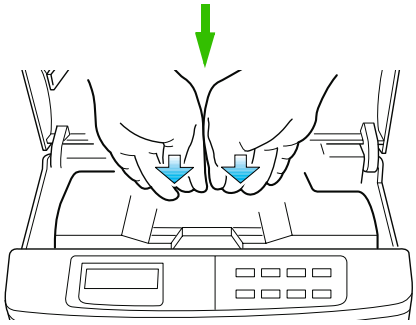


☛ **Be sure to peel off the seal on the toner container before mounting the toner container on the developer unit.**

7. When the toner container is installed correctly on the developer.

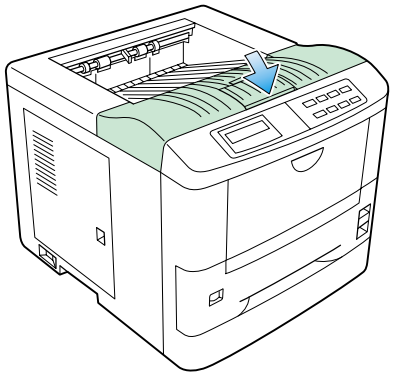


8. Push the top of the toner container unit ("**PUSH HERE**") until it locks in.



☛ **Make sure that the toner container is properly locked in the printer.**

9. Close the top cover by pressing the arrowed part in this diagram.



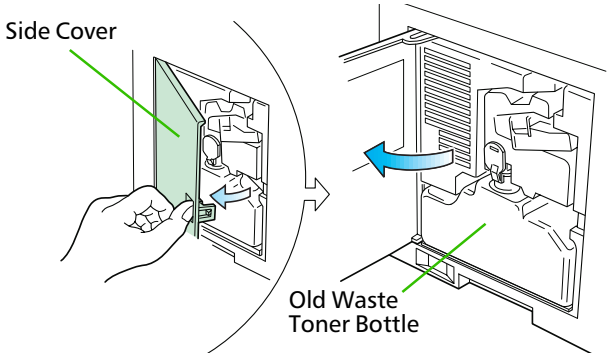
☛ **It is necessary to clean the inside of the printer after replacing the toner container.**

If the toner container is replaced when the message `Replace Toner Clean printer` is displayed, the message `Clean printer Press CONTINUE` will be displayed after replacement. After cleaning the inside of the printer (See Section *4.2. Cleaning*), the message will disappear when the CONTINUE key is pressed, and the printer will be ready for printing.

Replace the Waste Toner Bottle

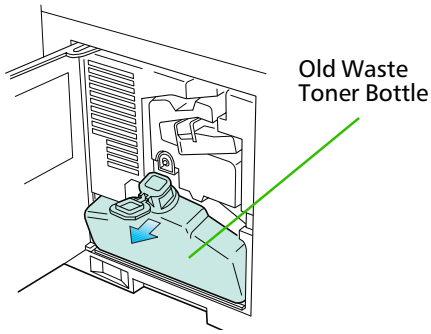
☛ **When replacing the toner container, the used waste toner bottle in the printer should also be replaced with a new one from the new toner kit.**

1. Open the printer side cover.

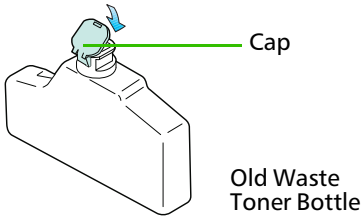


2. Remove the waste toner bottle as shown right.

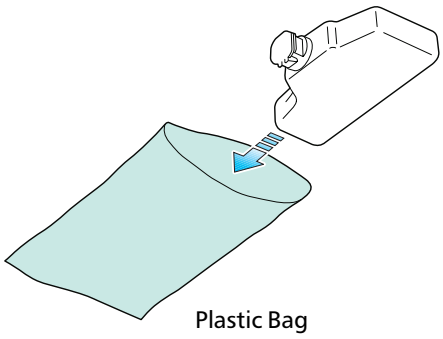
☛ **Remove the waste toner bottle as gently as possible so as not to scatter the waste toner inside. Do not let the opening of the waste toner bottle face downward.**



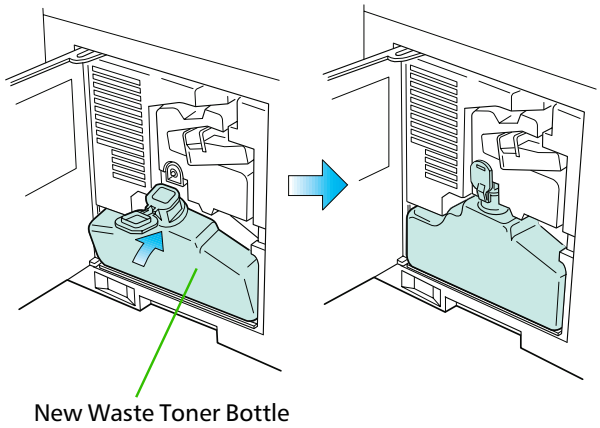
3. Cap the waste toner bottle after removing from the printer.



4. To avoid toner spilling, place the capped waste toner bottle in the plastic bag supplied before forwarding to proper disposal.



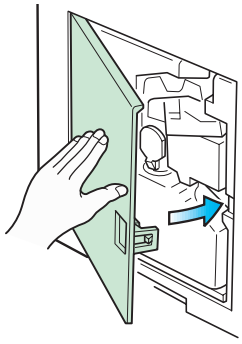
5. Locate the new waste toner bottle in the toner kit, and install in the printer as shown right.



☛ **Do not cap the new waste toner bottle.**

Insert the new waste toner bottle with the bottle tilted slightly towards you as shown in the figure.

6. After ensuring that the bottle is correctly installed, close the side cover.



4.2. Cleaning

In addition to the maintenance procedures described on the following pages, the charger wire in the drum unit and paper feed unit should be cleaned from time to time, or whenever print quality problems occur.

To avoid print quality problems, the following printer parts must be cleaned with every toner container replacement.

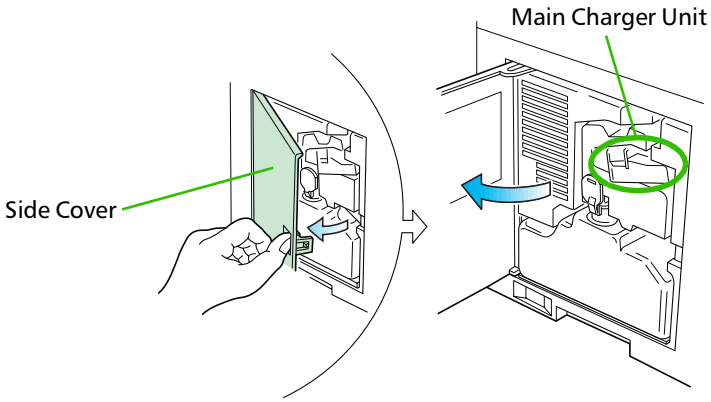
☛ **If the toner container has been replaced when the message `Replace Toner Clean printer` was displayed, the message `Clean printer Press CONTINUE` will be displayed after replacement. After cleaning the inside of the printer following the procedure shown below, press the CONTINUE key; the message will disappear and the printer will be ready for printing.**

Main Charger Unit

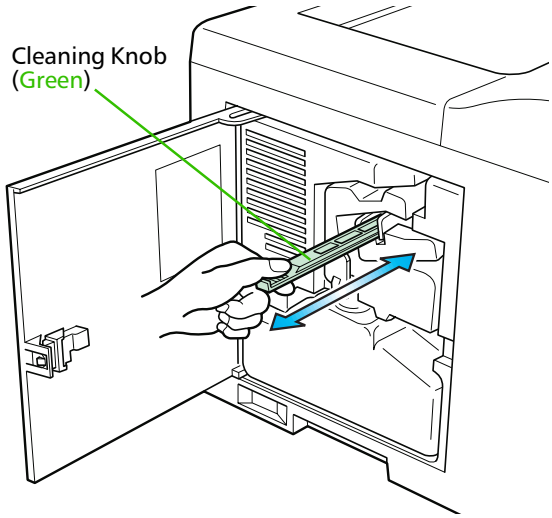
The main charger unit grid should be cleaned when the toner container is changed.

Cleaning the Charger Wire

1. Open the printer side cover.

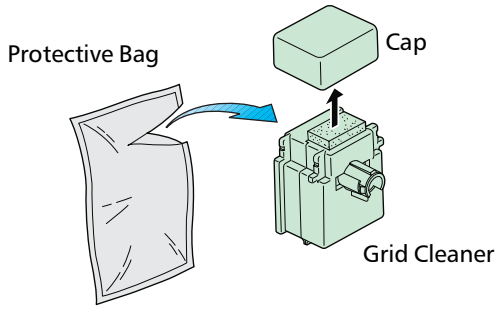


2. Pull the cleaning knob (Green) slowly in and out a few times. This pulls a cleaning pad inside the drum unit along the wire.



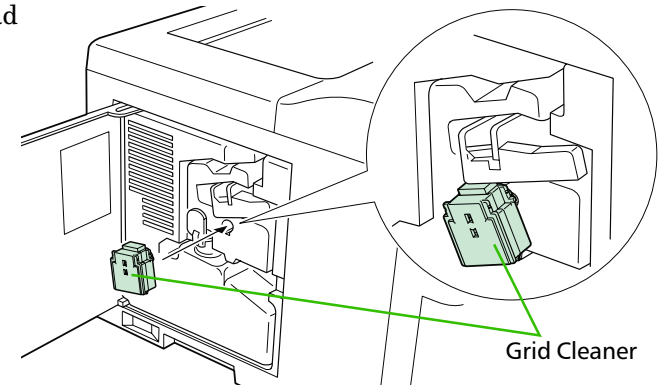
Cleaning the Grid

1. Take the grid cleaner from protective bag in the new toner kit, and remove the cap.



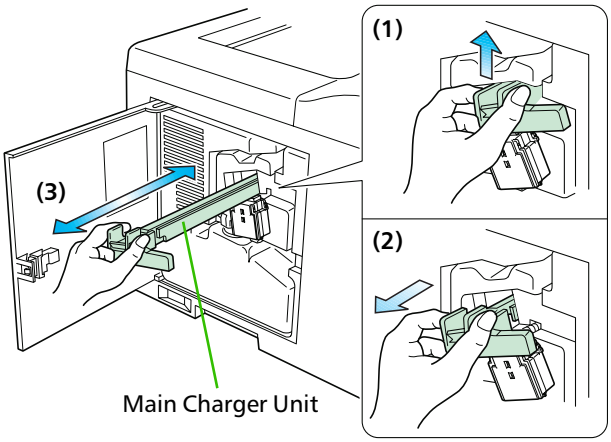
☛ **The grid cleaner pad is impregnated with water. Perform the following cleaning procedure before the pad dries.**

2. Attach the grid cleaner to the printer with the pad uppermost, as shown in the diagram.



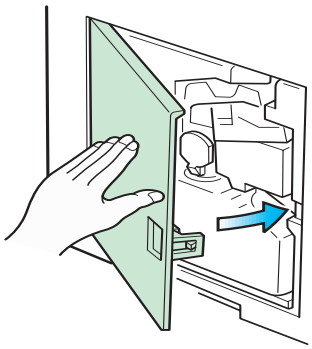
3. After attaching the grid cleaner, repeat the action of slowly pulling out and then pushing back in the main charger unit at least 5 times. It is easier to pull out the main charger for the first time if it is raised slightly, as shown in the figure.

The grid part underneath the main charger is cleaned by this procedure.



4. When the grid is clean, remove the grid cleaner from the printer and dispose of it. The grid cleaner is not re-usable.

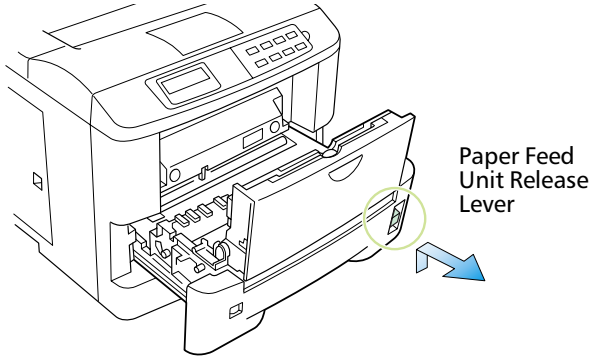
5. After cleaning the charger wire, push the cleaning knob all the way in and close the side cover.



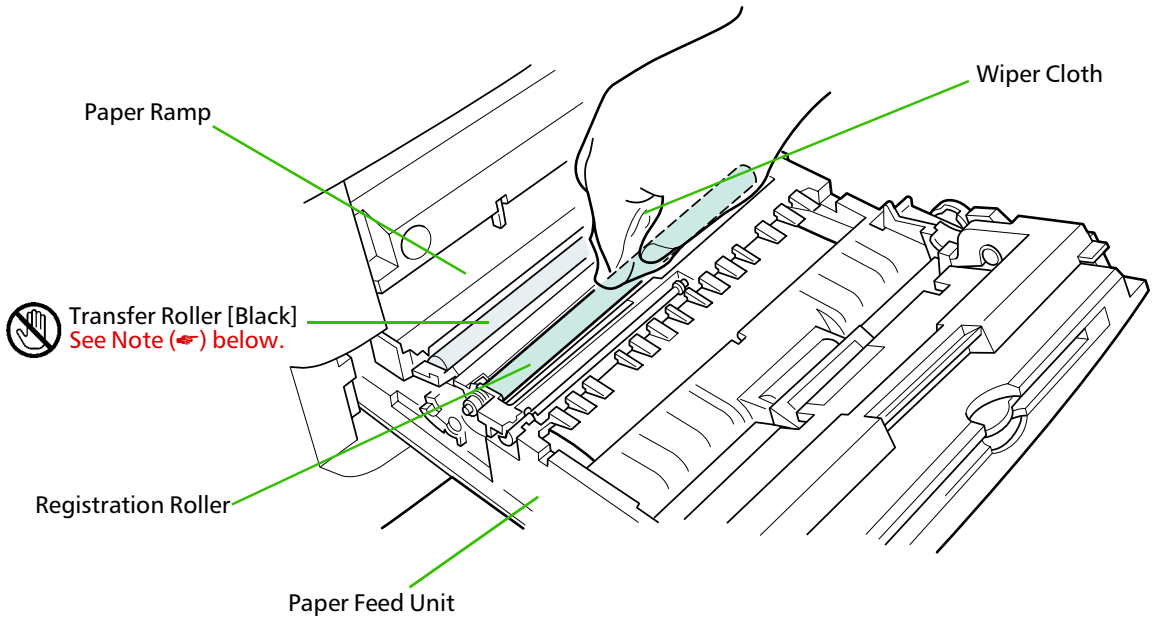
Paper Feed Unit

To avoid print quality problems due to paper dust and debris, clean the paper feed unit in the following manner.

1. Pull the paper feed unit release lever up and draw the paper feed unit all the way out until it stops.



2. Wipe the paper dust on the registration roller and the paper ramp using the wiper cloth included in the toner kit.



☛ **Do not touch the transfer roller (the black roller) when wiping the paper ramp.**

Chapter 5
Troubleshooting

This chapter explains how to handle printer problems which may or may not occur. The procedures are easy to follow. If a problem persists after you have completed the appropriate troubleshooting procedures, call for the assistance of a service person.

5.1. General Guide

If the printer does not print

If nothing is displayed on the message display on the front control panel, then you probably have a power problem. See *section 5.2*.

If the printing is abnormal

With the printer on-line and ready, press the **STATUS** key to print a status page. You can also optimize print quality using the KIR test pattern printed at the bottom of the status page. To adjust the print status, see *Chapter 2*.

- ❒ If the result is normal, you may have an interface problem. See section 5.3.
- ❒ If the result is not normal, you have a print quality problem. See section 5.4.

If a maintenance message is displayed on the message display:

- ❒ See section 5.5. (For a paper jam, see section 5.6.)

If the printer does not print the entire page or indicates `Memory overflow` on its message display, try adding optional memory. To add optional memory, see *Chapter 1*.

5.2. Power Problems

☞ **The printer power rating must be within the voltage range in your country. If in doubt, consult your dealer.**

If nothing happens when you switch the printer's power on, you have a power problem. The symptoms are a dark control panel, no printing, and no fan sound. Proceed as follows.

Check the power switch.

The on position is marked "**|**".

The off position is marked "O".

Check the power cord.

If the cord is loose at either end, switch power off, plug the power cord in securely, then switch power on again.

Call for the assistance of a service person.

If the above checks do not solve the problem, call for the assistance of a service person.

5.3. Interface Problems

If the printer prints a status page correctly but does not print data from the computer correctly (or at all), there may be an interface problem.

Check the interface (network) cable.

Make sure the cable is plugged in securely at both ends.

Check your file and software.

Try printing a different file, or using a different print command.

Try using a different cable.

Compare the pin assignments listed in *Appendix C* with the specifications of your cable.

Call for the assistance of a service person.

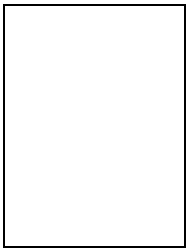
If the above checks do not solve the problem, call for the assistance of a service person.

5.4. Print Quality Problems

Print quality problems range from uneven tone to completely blank output. The troubleshooting procedure for each type of problem is given below.

If the checks explained in this section do not solve the problem, call for the assistance of a service person.

Completely blank printout

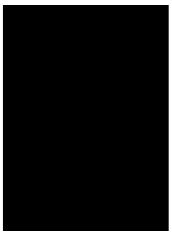


Check the developer unit.

Open the printer top cover and check that the developer unit is inserted correctly and check that the developer 's connector is connected properly.

Call for the assistance of a service person.

All-black printout

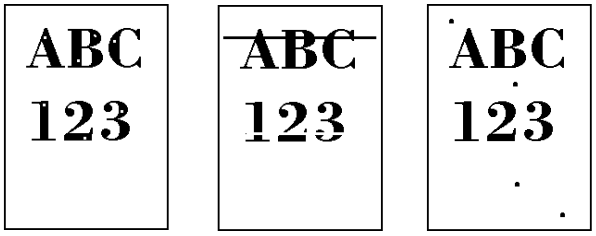


Check the Main Charger Unit

Open the printer side cover and check that the main charger unit is correctly installed.

Call for the assistance of a service person.

Dropouts, horizontal streaks, stray dots



Clean the charger wire.

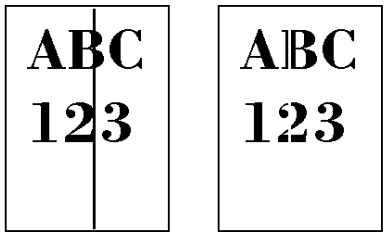
Open the printer side cover. Pull the green main charger wire cleaning knob slowly in and out a few times. See Section *4.2*.

Note the spacing of the defects.

If the defects occur at regular intervals of 60.6 mm (2.4 inches), the problem may be a dirty transfer roller. Call for the assistance of a service person.

If the defects occur at regular intervals of 94 mm (3.7 inches), the problem may be a damaged drum unit or fuser roller. Call for the assistance of a service person.

Black or white vertical streaks



Check the control panel.

If the `Toner low TK-20 Clean printer` message is displayed and the indicator is flashing, install a new toner kit. See Section *4.1*.

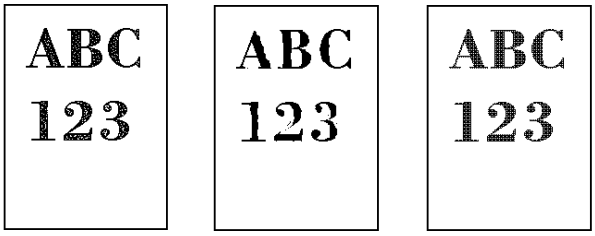
Clean the charger wire.

Open the printer side cover. Pull the green main charger wire cleaning knob slowly in and out a few times. See Section *4.2*.

Call for the assistance of a service person.

If the above checks do not solve the problem, call for the assistance of a service person.

Faint or blurred printing



Check the control panel.

If the `Toner low TK-20 Clean printer` message is displayed and the indicator is flashing, install a new toner kit. See Section *4.1*.

Set the print density from the control panel to a higher level than the current setting. See Section *2.14*.

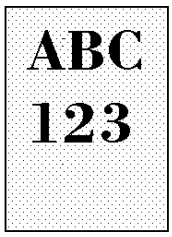
Make sure the Paper Type setting is correct.

Check the Ecoprint setting.

See Section *2.12*.

Grey background

Check the control panel.



If the `Toner low TK-20 Clean printer` message is displayed and the indicator is flashing, install a new toner kit. See Section *4.1*.

Check the print density.

Display the print density menu from the control panel and select a lighter density setting. See Section *2.14*.

Clean the main charger wire.

Open the printer's side cover. Pull the green main charger wire cleaning knob slowly in and out a few times. See Section *4.2*.

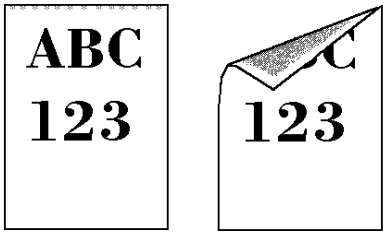
Check the main charger unit installation.

Open the printer's side cover. Remove the main charger unit half way out, then reinstall it properly. See section *4.2*.

Call for the assistance of a service person.

If the above checks do not solve the problem, call for the assistance of a service person.

Dirt on the top edge or back of the paper



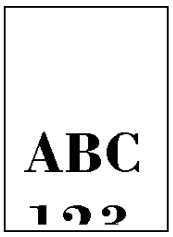
Check the paper chute and the ramp.

Draw out the paper feed unit and check for toner on the paper ramp. Clean the paper ramp (see Section *4.2.*) using the wiper supplied, or a soft, dry, lint-free cloth.

Check the transfer roller.

If the transfer roller is dirty with toner, try printing several pages; or call for the assistance of a service person.

Characters out of position



Check the file or program.

See if the problem is caused by incorrect PRESCRIBE 2e commands. If the problem occurs with only one file or program, the most likely cause is a command error.

Call for the assistance of a service person.

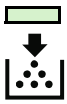
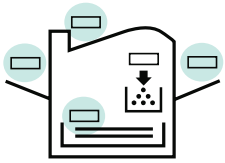
If the above checks do not solve the problem, call for the assistance of a service person.

5.5 Indicators and Messages

The tables on the following pages indicate how to respond to problems indicated by the control panel symbolic indicators and messages.

Indicators

Table 5.1 Symbolic Indicators

Indicator	Condition	Corrective Action
	**Flashing**	The printer has run low on toner. The toner should be replaced as soon as possible.
	Lit	Install a new toner kit. See Section *4.1*.(Toner Empty)
	**Fast Flashing**	There is a paper jam. There is a possibility that paper may be jammed at the point indicated by flashing, open and remove any jammed paper. See Section *5.6*.
	Slow Flashing	The paper has run out in the paper cassette or MP tray. Please insert paper. See Section *1.4*.
	Lit	This indicates either the current paper feeder or the paper output point.
ATTENTION	**Flashing**	The printer has insufficient memory available or the printer is warming up (Please wait). Confirm the message indicated on the message display. See Section *5.5*.
	Lit	Note the maintenance message on the message display and consult Table *5.2*.

Maintenance Messages

Table 5.2 Maintenance Messages

Message	Corrective Action
Top cover Open	Open the top cover, then close tightly.
Side cover Open	Open the side cover, then close tightly.
Paper feed unit Open	Open the paper feed unit, then close tightly.
Face-down tray paper full	The face-down tray has become full (approx. 250 pages). You must remove all printed pages from the face-down tray. When the printer senses that the face-down tray is empty again, it will continues printing into the face-down tray (Model FS-3750 only).
Add paper (paper source) (paper size)/(paper type) *(paper size) and (paper type) are displayed flashing alternately.	The paper has run out. Supply paper according to the paper source displayed (paper cassette, MP tray, or optional paper feeder).
Set paper Press CONTINUE	Add a sheet of paper to the MP tray, and press the **CONTINUE** key.
Paper jam	Open the top cover or the paper feed unit and correct the paper jam (or paper mis-feeding in the cassette). See Section *5.6*.
Warning Low memory	The printer's internal memory is running low due to the number of fonts and macros downloaded. Print a status page to see how much user memory is left, and try deleting unnecessary fonts and macros. See the PRESCRIBE 2e DELF and DELM commands explanation in the programming manual (CD-ROM).
Option interface Error	A failure has occurred with the option interface. Check the option interface installed on the printer.
Toner low TK-20 Clean printer	Replace the toner container using a new toner kit. See Section *4.1*.
Replace Toner Clean printer	Replace the toner container using a new toner kit. The printer does not operate when this message is displayed. See section *4.1*.
Clean printer Press CONTINUE	Please clean the inside of the printer. See Section *4.2*. This message will be displayed when replacing the toner container after the message Replace Toner Clean printer has been displayed. After cleaning the inside of the printer, press the **CONTINUE** key and the printer will be ready for printing.
Replace Waste- toner bottle	Replace the old waste toner bottle with the new one which is included in the TK-20/ TK-20H toner kit. The message will also be shown if the waste toner bottle has become full. The waste toner bottle should be replaced when the message display eventually shows Toner low TK-20 Clean printer. See Section *4.1*.
Missing Waste- toner bottle	Install the waste toner bottle. See Section *1.4*. The printer does not operate when this message is displayed.

Message	Corrective Action
Load Cassette # (paper size)/(paper type) *(paper size) and (paper type) are displayed flashing alternately.	There is data for printing that matches with a paper cassette setting (paper size, paper type), but there is no paper in the cassette. Set paper into the paper source as displayed on the control panel, and press the **CONTINUE** key to restart printing. However, the paper source number (#) is only displayed when there is an optional paper feeder installed. Or, if you want to print from a different paper source press the **FEED** key to display Use alternative? and you can change the source for paper feeding. Further, you can change the paper source by pressing the **FEED** key. After selecting a paper source and pressing the **MODE** key, Paper handling > appears. By pressing the ► key, the paper type settings menu appears. After setting the correct paper type, press the **EXIT** key and printing starts.
Load MP tray (paper size)/(paper type) *(paper size) and (paper type) are displayed flashing alternately.	There is no paper cassette set (paper size, paper type) that matches with the data for printing . Because there is no cassette that matches the data, printing is done from the MP tray. Set paper into the MP tray that matches the paper size and type shown on the display and press the **CONTINUE** button to restart printing. Or, if you want to print from a different paper source press the **FEED** key to display Use alternative? and you can change the source for paper feeding. Further, you can change the paper source by pressing the **FEED** key. After selecting a paper source and pressing the **MODE** key, Paper handling > appears. By pressing the ► key, the paper type settings menu appears. After setting the correct paper type, press the **EXIT** key and printing starts.
Call service personEn:0123456	Mechanical error (n=0, 1, 2, ...)-Call a service person. The printer does not operate when a message beginning with E is displayed. The total number of pages printed is also indicated.
Call service personFn:0123456	Controller error (n=0, 1, 2, ...)-Call a service person. The printer does not operate when a message beginning with F is displayed. The total number of pages printed is also indicated.

Error Messages

Table 5.3 Error Messages

Message	Corrective Action
Memory overflow Press CONTINUE	The total amount of data received by the printer exceeds the printer's internal memory. Try adding more memory (expansion RAM). Press the **CONTINUE** key to resume printing. You can abandon printing by the **CANCEL** key.
Print overrun Press CONTINUE	The data transferred to the printer was too complex to print on a page. Press the **CONTINUE** key to resume printing. (The page may break in some pages.) You can abandon printing by the **CANCEL** key. **Note: After this message has been displayed, Page protect mode will be On. To maintain optimum use of memory during printing, display** >Page protect **from the control panel, and re-select** Auto. See the last page in this manual.
KPDL Error Press CONTINUE	Current print processing cannot continue. To print out a error report, display > Print KPDL errs from the mode select menu, and select On. Press the **CONTINUE** key to resume printing. You can abandon printing by the **CANCEL** key.
RAM DISK error ## Press CONTINUE	Check the error code displayed in the place of ## and refer to the appropriate description below. 01: Abnormal format. Try turning the power off and on again. 02: RAM DISK mode is Off. Turn RAM DISK mode On. 03: Cannot write to the disk system because it is write protected. Remove the write protection. 04: No disk space. Clean up files. 05: Specified file not on disk. 06: No memory for use by disk system. Expand printer memory. 10: Cannot format disk because host data is spooled there. Format the disk after Ready is displayed. 98: Unable to read files during the sorting (file does not exist, or corrupted).
MEMORY CARD err Insert again	The memory card is accidentally removed from the printer's memory card slot during reading. If you continue reading the memory card, insert the same memory card into the slot again. The printer again reads it from the beginning of the data. **Note: We recommend that you follow the reading procedure from the beginning to ensure correct reading of the memory card.**
Insert the same MEMORY CARD	You have inserted the wrong memory card when the Insert again message was displayed. Remove the wrong memory card from the printer's memory card slot and insert the correct memory card. The printer again reads it from the beginning of the data.
Format error MEMORY CARD	This message appears when the printer is in the ready state and the memory card is not formatted, and therefore cannot be read or written. Follow the procedure on Section *2.6.* to format the card.
Warning battery MEMORY CARD	This message appears when the printer is in the ready state and the battery in the memory card is low. You can still enter the memory card mode, but the battery should be changed as soon as possible.
Battery error MEMORY CARD	This message appears when the printer is in the ready state and the battery in the memory card is dead, or there is no battery at all. It is not possible to use the memory card mode until you insert a good battery in the card.

Message	Corrective Action
MEMORYCARD err## Press CONTINUE	This message appears when an error occurs during access to the memory card using the PRESCRIBE 2e RWER (ICCD) command or from the printer's control panel. Look at the error code given in place of ## and refer to the corresponding description given below. Note that error codes of 09 and above only result when memory card operations are done fromthe control panel. 01: Data or memory card capacity is too large. • This error code appears if an attempt is made to write more than 32 MB of data to a memory card or if the capacity of the memory card installed in the printer is more than 32 MB. Decrease the data being written to the memory card to less than 32 MB. Note that only the memory card of 32 MB and less can be used by this printer. • This error code appears when a data name not existing on the memory card is specified. Check the data names on the memory card. 02: The memory card does not meet specifications. This memory card cannot be used by this printer. Insert a memory card which can be used by this printer. (See "Memory Card" of *Chapter 2*.) 03: The memory card is not a JEIDA card. Only a JEIDA Ver. 4.2 memory card can be used by this printer. 04: The card is an S-RAM or flash card which cannot be used by this printer. 05: There is no battery in the memory card. Replace the battery in the memory card with a new one. 06: The memory card is write-protected. Cancel the write-protection of the memory card. 07: The memory card requires formatting. Format the memory card from the control panel. 09: The capacity of the memory card is insufficient. This error code appears when an attempt is made to write more data on the memory card than available memory. To halt the writing of data, first stop data transmissions from the computer, and then the printer's **CONTINUE** key. Press the **FORM FEED** key if the message Waiting will appear in the message display. The message display will return to reading Ready. 11: The memory card is full of data items. The number of data items which can be written on the memory card is limited to 127. Pressing the **CONTINUE** key will restore the message Ready in the message display. 13: This is a logical error. Try substituting another flash memory card. 17: The flash memory card cannot be written due to insufficient printer memory. Either delete unnecessary macros and/or fonts stored in the printer, or expand the printer's available memory. 18: This is a write error. Try substituting another flash memory card. (Error codes 13 through 18 apply only to a flash memory card.)
I/F occupied	This message is displayed when you attempt to use the printer's control panel to change the environmental settings on the interface from which data are presently being received.
Processing PAR FIT A4	FIT (image FITting) flashes to indicate that a loss of raster data occurred when the data was compressed to be fitted within the currently available memory. Flashing FIT extinguishes automatically when the job times out; the printer receives the next data from the host computer; or if you press any key on the printer's control panel. Try adding more memory in the printer to prevent this error.

5.6. Correcting a Paper Jam

The Paper jam message is displayed on the message display when paper becomes stuck in the paper transport system, the paper feed timing is incorrect, or paper fails to feed at all. The jam can be corrected by removing the paper.

The printer goes off-line when the Paper jam message is displayed.

Compare the symbol on the front panel that is flashing to *Figure 5.1* and take the appropriate action listed below:

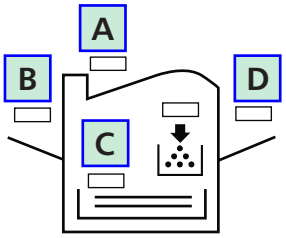


Figure 5.1. Printer Symbol

A	Check the face-down output tray.	If paper is partially fed out into the tray, pull the paper out the rest of the way by hand, then open and close the printer's top cover or the paper feed unit.
	Check the inside of the rear cover.	Open the printer's rear cover. Draw out the paper feed unit. Pull out the paper as shown in Figure *5.2*. Close the printer's rear cover.
B	Check the face-up output tray.	Refer to A, above.
C	Check the paper feed cassette.	If paper is stacked in the paper cassette, not reaching the registration rollers, remove the paper cassette and draw out the paper feed unit. Remove the jammed paper gently. See Figure *5.3*. Close the paper feed unit and install the paper cassette in the printer.
	Check the registration roller.	If the paper is caught by the registration rollers, draw out the paper feed unit half way and remove the jammed paper gently. See Figure *5.4*. Return the paper feed unit to the printer.
D	Check the MP tray.	If the paper is stacked in the MP tray, remove the paper by pulling it out. Open and close the printer's top cover or the paper feed unit.

When the jammed paper has been removed, open and close the printer's top cover or the paper feed unit. Then the printer automatically warms up, goes on-line, and continues printing. Depending on the point at which the jam occurred, the printer may or may not print the jammed page.

If paper jams occur frequently, try using a different type of paper, replace with paper from another ream, turn the stack of paper over, or turn the paper the other way around. Read the information in *Appendix B*. Also, look for tiny pieces of paper that may have been torn off and overlooked when the jammed paper was removed.

If you cannot solve the problem by changing the paper, there may be a problem with the printer. Call a service person.

When pulling the paper, pull it gently so as not to tear it. Torn pieces of paper are difficult to remove and may be easily overlooked, deterring the jam recovery.

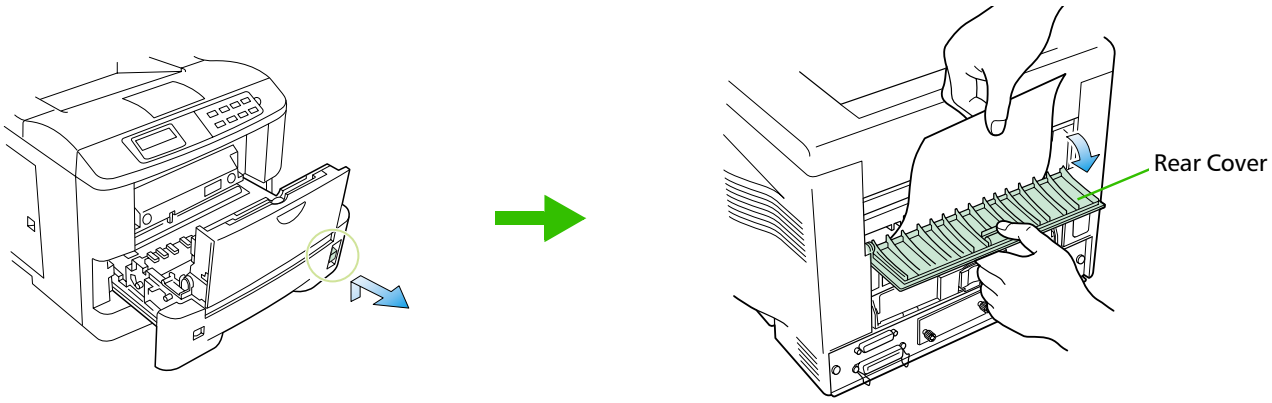


Figure 5.2. Rear Cover

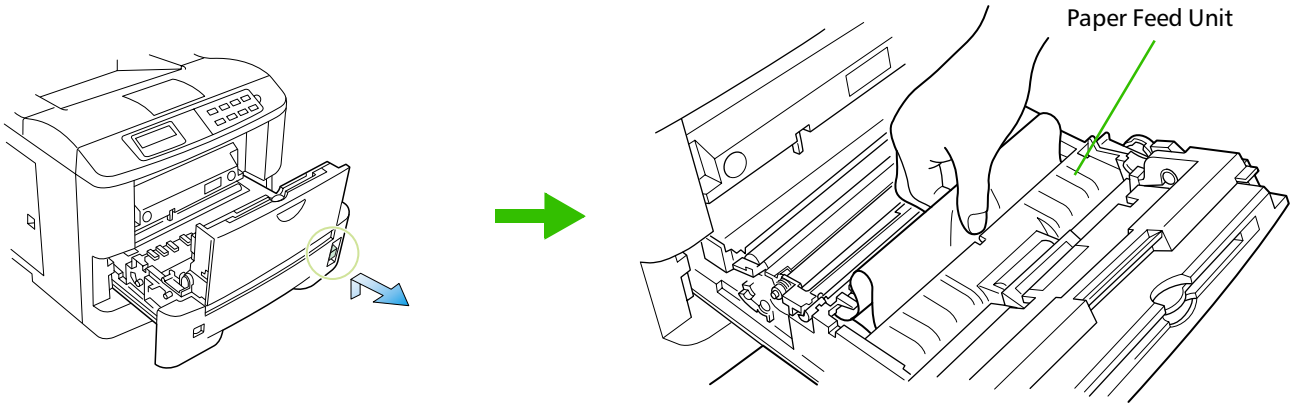


Figure 5.3. Paper Cassette

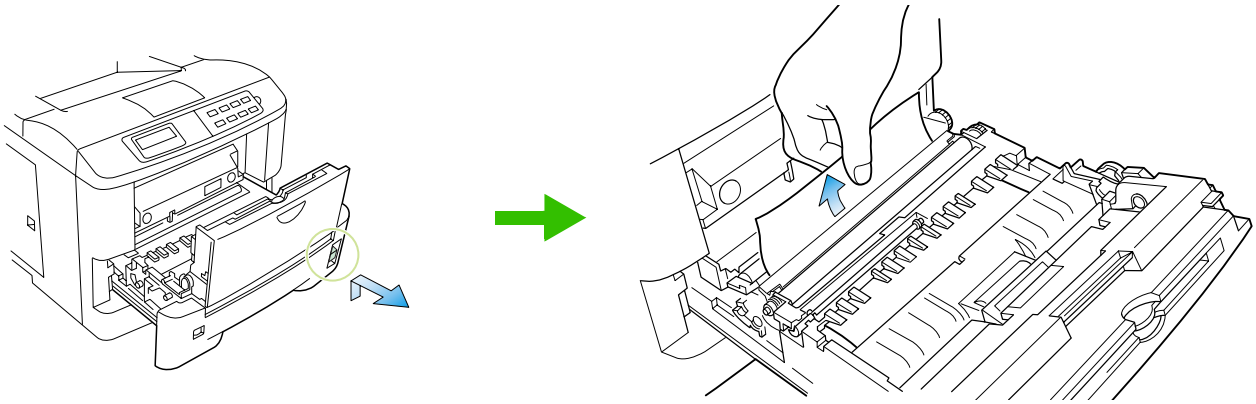


Figure 5.4. Paper Feed Unit

Appendix A
Printer Specifications

Item	Description	
	FS-1750	**FS-3750**
Printing method	Electrophotography, laser scan.	
Printing speed	14 pages/minute (A4 or letter-size paper, when printing multiple copies of the same page)	18 pages/minute (A4 or letter-size paper, when printing multiple copies of the same page)
Resolution	1200 dpi (Fine 1200 mode/Fast 1200 mode) 600 dpi (with KIR 2 [Kyocera Image Refinement]) 300 dpi (with KIR 2 [Kyocera Image Refinement])	
First print	Approx. 15 seconds (A4 or letter size), depends on input data.	Approx. 12 seconds (A4 or letter size), depends on input data.
Warm-up time	Approx. 50 seconds (at 23°C, 120 V or 220 V)	Approx. 40 seconds (at 23°C, 120 V or 220 V)
Controller	PowerPC 603e (100 MHz)	PowerPC 603e (166 MHz)
Main memory	8 MB, expandable up to 72 MB	16 MB, expandable up to 64 MB
Memory card slot	One, PC CARD (PCMCIA 2.1/JEIDA 4.2 [type I , memory card])	
Self test	Performed at power-up	
Scanning system	Laser diode, polygon mirror.	
Maximum duty cycle	25,000 pages/month	50,000 pages/month
Drum	Amorphous silicon drum	
Developer	Mono-component dry developer	
Main charger	Positive scorotron charger	
Transferring	Negative charger roller	
Separation	Curvature separation	
Drum cleaning	Blade cleaner	
Drum discharging	Illumination by eraser LED array	
Fuser	Heat roller and pressure roller	
Toner saving	Ecoprint mode	
Paper	Plain paper. See *Appendix B*.	
Paper feed trays	Cassette: Legal size to A5 universal cassette. Holds 250 sheets of thickness 0.1 mm. MP tray: Adjustable to ISO A6 to Legal size. Holds 100 sheets of thickness 0.1 mm.	
Capacity of output trays	Face-down tray — 250 sheets of thickness 0.1 mm. Face-up tray — 250 sheets of thickness 0.1 mm.	
Ambient conditions	Temperature: 10°C to 32.5°C (50°F to 90.5°F) Humidity: 20% to 80% RH Optimum conditions: 20°C (68°F), 60% RH. Altitude: Max. 2000m (6500 feet) Illumination: Max. 1500 lux	

Item	Description	
	FS-1750	**FS-3750**
Power requirements	120 V, 60 Hz, max. 5.8 A (U.S.A./Canada) 220–240 V, 50 Hz/60 Hz, max. 3 A (European countries) Max. allowable voltage fluctuation: ±10% Max. allowable frequency fluctuation: ±2%.	120 V, 60 Hz, max. 7.8 A (U.S.A./Canada) 220–240 V, 50 Hz/60 Hz, max. 4 A (European countries) Max. allowable voltage fluctuation: ±10% Max. allowable frequency fluctuation: ±2%.
Power consumption	Max. 667 W During sleeping 14 W	Max. 898 W During sleeping 16 W
Operating noise (in accordance with ISO 7779[Bystander Position, sound pressure level at the front])	During printing: LpA = 50 dB (A) During standby: LpA = 39 dB (A) During sleep mode: Immeasurably low	During printing: LpA = 53 dB During standby: LpA = 39 dB During sleep mode: Immeasurably low
Dimensions	373 mm (14.7") wide × 310 mm (12.2") high × 383 mm (15.1") deep (Excl. the paper tray)	
Weight	14 kg (30 lb.), main unit only	

Appendix B
Paper Selection

B.1. General Guidelines

The printer is designed to print on high-quality copier bond paper (the kind used in ordinary dry copier machines), but it can accept a variety of other types of paper as well within the limits specified below.

☞ **The manufacturer assumes no liability for problems that occur when paper not satisfying these requirements is used.**

Selection of the right paper is important. The wrong paper can result in jams, misfeeds, curl, poor print quality, and paper waste, and in extreme cases can damage the printer. The guidelines given below will increase the productivity of your office by ensuring efficient, trouble-free printing and reducing wear and tear on the printer.

Paper Availability

Most types of paper are compatible with a variety of machines. Paper intended for xerographic copiers can also be used with the printer.

There are three general grades of paper: economy, standard, and premium. The most significant difference between grades is the ease with which they pass through the printer. This is affected by the smoothness, size, and moisture content of the paper, and the way in which the paper is cut. The higher the grade of paper you use, the less risk there will be of paper jam and other problems, and the higher the level of quality your printed output will reflect.

Differences between paper from different suppliers can also affect the printer's performance. A high-quality printer cannot produce high-quality results when the wrong paper is used. Low-priced paper is not economical in the long run if it causes printing problems.

Paper in each grade is available in a range of basis weights (defined later). The traditional standard weights are 16, 20, and 24 pounds (60g/m² to 90g/m²).

Paper Specifications

The following table summarizes the basic paper specifications. Details are given on the following pages.

Table B.1 Specifications

Item	Specification
Weight	60 to 90 g/m² (16 to 24 lbs./ream)
Thickness	0.086 to 0.110 mm (3.4 to 4.3 mils)
Dimensional accuracy	±0.7 mm (±0.0276 inches)
Squareness of corners	90° ±0.2°
Moisture content	4% to 6%
Direction of grain	Long grain
Pulp content	80% or more

B.2. Selecting the Right Paper

Laser printing is a process involving laser light, electrostatic discharge, toner, and heat. In addition, as the paper passes through the printer it undergoes considerable sliding, bending, and twisting motions. A high-quality printing paper matching the printer's requirements withstands all these stresses, enabling the printer to turn out clean, crisp printed copy consistently.

Remember that all paper is not the same. Some of the factors to consider when selecting paper for the printer are as follows:

Condition of the Paper

Avoid using paper that is bent at the edges, curled, dirty, torn, embossed, or contaminated with lint, clay, or paper shreds

Use of paper in these conditions can lead to illegible printing, misfeeding, and paper jams, and can shorten the life of the printer. In particular, avoid using paper with a surface coating or other surface treatment. The paper should have as smooth and even a surface as possible.

Composition

Do not use paper that has been coated or surface-treated and contains plastic or carbon. The heat of fusing can cause such paper to give off harmful fumes.

Bond paper should contain at least 80% pulp. Not more than 20% of the total paper content should consist of cotton or other fibers.

Paper Size

Cassettes and a MP tray are available for the paper sizes listed in Table B.2. The dimensional tolerances are ±0.7 mm (±0.0276 inches) for the length and width. The angle at the corners must be 90° ±0.2°.

Table B.2 Paper Sizes for Paper Feeding

Multi-Purpose tray	Size	Cassette or multi-purpose tray	Size
Monarch	3-7/8 × 7-1/2 inches	Legal	8.5 × 14 inches
Business	4-1/8 × 9-1/2 inches	Letter	8.5 × 11 inches
International DL	110 × 220 mm	ISO A4	210 × 297 mm
International C5	162 × 229 mm	ISO A5	148 × 210 mm
International B5	176 × 250 mm	JIS B5	182 × 257 mm
Executive	7-1/4 × 10-1/2 inches	Custom	148 × 210 mm to 216 × 356 mm
Commercial 9	3-7/8 × 8-7/8 inches	Other sizes of paper can be fed manually. The minimum size of manually fed paper is 80 × 148 mm (3.1 × 5.8 inches), fed lengthwise. The maximum size is 216 × 356 mm (8.5 × 14 inches).	
Commercial 6-3/4	3-5/8 × 6-1/2 inches		
ISO A6	105 × 148 mm		
JIS B6	128 × 182 mm		
Hagaki	100 × 148 mm		
Oufuku-Hagaki	148 × 200 mm		

Smoothness

The paper should have a smooth, uncoated surface. Paper with a rough or sandy surface can cause voids in the printed output. Paper that is too smooth, however, can cause multiple feeding and fogging problems. (Fogging is a gray background effect.)

Basis Weight

Basis weight is the weight of a standard quantity of paper. In the traditional system the standard quantity is a ream consisting of 500 sheets measuring 17 × 22 inches each. In the metric system the standard quantity is 1 square meter.

Paper that is too light or too heavy can cause misfeeding, jams, and premature wear of the printer. Uneven paper weight can cause multiple feeds, print defects, poor toner fusing, blurring, and other print quality problems. The proper weight is 60 to 90 g/m² (16 to 24 lbs/ream).

Thickness (Caliper)

Thick paper is referred to as high-caliper paper and thin paper as low-caliper paper. The paper used with the printer should be neither extremely thick nor extremely thin. If you are having problems with paper jams, multiple feeds, and faint printing, the paper may be too thin. If you are having problems with paper jams and blurred printing the paper may be too thick. The proper thickness is 0.086 to 0.110 mm (3.4 to 4.3 mils).

Moisture Content

Moisture content is defined as the percent ratio of moisture to the dry mass of the paper. Moisture can affect the paper's appearance, feedability, curl, electrostatic properties, and toner fusing characteristics.

The moisture content of the paper varies with the relative humidity in the room. When the relative humidity is high and the paper absorbs moisture, the paper edges expand, becoming wavy in appearance. When the relative humidity is low and the paper loses moisture, the edges shrink and tighten, and print contrast may suffer.

Wavy or tight edges can cause misfeeding and alignment anomalies. The moisture content of the paper should be 4% to 6%.

To ensure the proper moisture content it is important to store the paper in a controlled environment. Some tips on moisture control are:

- Store paper in a cool, dry location.
- Keep the paper in its wrapping as long as possible. Rewrap paper that is not in use.
- Store paper in its original carton. Place a pallet etc. under the carton to separate it from the floor.
- After removing paper from storage, let it stand in the same room as the printer for 48 hours before use.
- Avoid leaving paper where it is exposed to heat, sunlight, or damp.

Paper Grain

When paper is manufactured, it is cut into sheets with the grain running parallel to the length (long grain) or parallel to the width (short grain). Short grain paper can cause feeding problems in the printer. All paper used in the printer should be long grain.

Other Paper Properties

Porosity: Refers to the density of the paper structure; that is, to how openly or compactly the fibers are bonded.

Stiffness: Limp paper can buckle inside the printer, while paper that is too stiff may bind. Either way the result is a paper jam.

Curl: Most paper has a natural tendency to curl in one direction. The paper should be loaded so that the natural curl is downward, to counteract the upward curl imparted by the printer. Printed sheets will then come

out flat. Most paper also has a top and bottom surface. Loading instructions are usually given on the paper package.

Electrostatic properties: During the printing process the paper is electrostatically charged to attract the toner. The paper must be able to release this charge so that printed sheets do not cling together in the output tray.

Whiteness: The contrast of the printed page depends on the whiteness of the paper. Whiter paper provides a sharper, brighter appearance.

Quality control: Uneven sheet size, corners that are not square, ragged edges, welded (uncut) sheets, and crushed edges and corners can cause the printer to malfunction in various ways. A quality paper supplier should take considerable care to ensure that these problems do not occur.

Packaging: Paper should be packed in a sturdy carton to protect it from damage during transport. Quality paper obtained from a reputable supplier is usually properly packaged.

B.3. Special Paper

This section explains printing on special paper. The page printer can use the following types of special paper. In this case, set the media type according to the table below.

Paper type	Media type
Colored paper	Color
Preprinted paper	Preprinted
Overhead projector transparencies	Transparency
Postcards	Cardstock
Envelopes	Envelope
Label	Labels

When using the above types of paper, be sure to use products that are specified for use with photocopiers and/or page printers. Feed paper other than colored paper or pre-printed paper from the MP (multi-purpose) tray or optional envelope feeder (EF-1).

Use paper that is sold specifically for use with copiers (heat-fusing type). Label paper and envelopes should not be placed in the cassette; they must be fed manually and delivered in the face up stack.

Since the composition and quality of special paper vary considerably, special paper is more likely than white bond paper to give trouble during printing. No liability will be assumed if moisture etc. given off in printing on special paper causes harm to the machine or operator.

☞ **Before purchasing any type of special paper, test a sample on the printer and check that printing quality is satisfactory.**

Specifications for each type of special paper are given below.

Overhead Projection (OHP) Film

OHP film must be able to withstand the heat of fusing during the printing process. It should satisfy the conditions in Table B.3.

Table B.3 OHP Film Specifications

Item	Specification
Tolerance of heat	Must tolerate at least 190°C (374°F)
Thickness	0.100 to 0.110 mm (3.9 to 4.3 mils)
Dimensional accuracy	±0.7 mm (±0.0276 in)
Squareness of corners	90° ±0.2°

To avoid trouble, OHP film must be delivered face-up.

If OHP film jams frequently, pull the top of the sheet very gently as it leaves the printer.

Adhesive-Backed Labels

The basic rule for printing on adhesive labels is that the adhesive must never come into contact with any part of the printer. Adhesive paper sticking to the drum or rollers will damage the printer.

Label paper must be manually fed.

Label paper has a structure comprising three layers, as shown in Figure B.1. The top sheet is printed on. The adhesive layer consists of pressure-sensitive adhesives. The carrier sheet (also called the linear or backing sheet) holds the labels until use. Due to the complexity of its composition, adhesive-backed label paper is particularly likely to give trouble in printing.

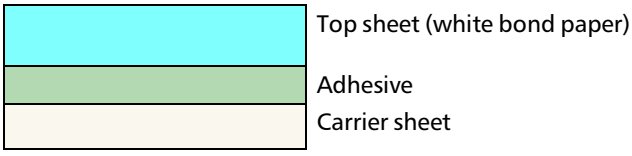


Figure B.1 Adhesive-back label

Adhesive label paper must be entirely covered by its top sheet, with no spaces between the individual labels. Labels with spaces in between are apt to peel off, causing serious jam problems.

Some label paper is manufactured with an extra margin of top sheet around the edge. Do not remove the extra top sheet from the carrier sheet until after printing is finished.

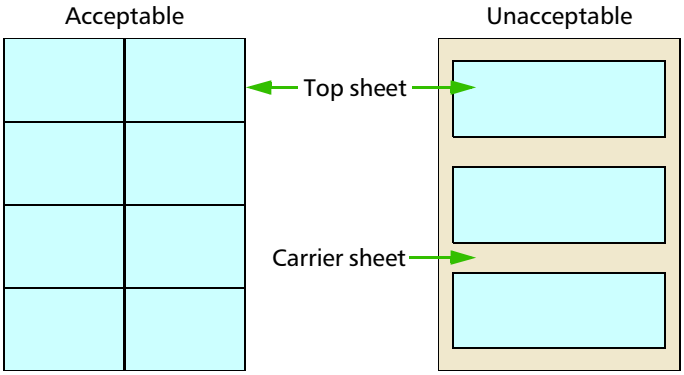


Figure B.2 Label arrangement

Table *B.4* lists the specifications for adhesive label paper.

Table B.4 Adhesive Label Specifications

Item	Specification
Weight of top sheet	44 to 74 g/m² (12 to 20 lbs/ream)
Composite weight	104 to 151 g/m² (28 to 40 lbs/ream)
Thickness of top sheet	0.086 to 0.107 mm (3.9 to 4.2 mils)
Composite thickness	0.115 to 0.145 mm (4.5 to 5.7 mils)
Moisture content	4% to 6% (composite)

Envelopes

The printer can print on envelopes using paper with a basis weight of 60 to 79 g/m² (16 to 21 lbs/ream). Envelopes must be manually fed.

An envelope is a more complex object than a single sheet of paper. For this reason, it may not be possible to obtain consistent printing quality over the entire envelope surface.

Many envelopes have a diagonal grain orientation. (See *Paper Grain* above.) This orientation is more likely to wrinkle and crease on its way through the printer. Before purchasing envelopes for use with the printer, test a sample to verify the envelope's suitability.

Do not use envelopes having an encapsulated liquid adhesive.

Avoid long printing runs consisting of envelopes only. Extensive envelope printing can cause premature printer wear.

To avoid jamming due to curled envelopes, do not leave more than approximately 10 printed envelopes stacked in the paper trays during multiple printing of the envelopes.

Colored Paper

Colored paper should satisfy the same conditions as white bond paper, listed in Table B.1. In addition, the pigments used in the paper must be able to withstand the heat of fusing during the printing process (up to 200°C or 392°F).

Preprinted Paper

Preprinted paper should have a bond paper base. The preprinted ink must be able to withstand the heat of fusing during the printing process, and must not be affected by silicone oil.

Do not use paper with any kind of surface treatment, such as the type of paper commonly used for calendars.

Recycled Paper

Select recycled paper that meets the same specifications as the white bond paper (See Table *B.1* on page *B-2*.) except whiteness.

☞ **Before purchasing recycled paper, test a sample on the printer and check that printing quality is satisfactory.**

Appendix C
Host Computer Interface

This appendix describes the signals used in the laser printer's parallel, RS-232C/RS-422A interfaces. It also lists pin assignments, signal functions, timings, connector specifications, and voltage levels. The RS-232C/RS-422A protocols are also covered. Finally, it explains the use of the printer in a multi-computer environment.

C.1. Parallel Interface

Parallel interface communication modes

The printer features fast data transmission on the parallel interface. The parallel interface mode can be activated from the printer's control panel (see *Chapter 2, Operating the Laser Printer*) as follows:

☞ **Use a parallel printer cable that complies with the IEEE1284 standard.**

Auto [default]

The printer automatically changes its communication mode to the one the host computer is currently using. Ordinarily, you should leave this setting unchanged.

Nibble (high)

High speed data communication is used in compliance with the IEEE 1284 standard.

Normal

The printer uses the communication method discribed by to the normal definitions of the Centronics interface.

High-speed

This mode enables faster data transmission between the printer and the host computer. (Select this mode if printing problems occur when the printer is connected to a workstation.)

Interface Signals

The pins of the parallel interface connector carry the signals listed in Table *C.1*. Asterisks in the table indicate signals that are active low. The table also indicates whether each signal is incoming or outgoing with respect to the printer.

Table C.1. Parallel Connector Pin Assignments

Pin	In/out	Description
1	In	Strobe* [nStrobe]
2	In	Data 0 [Data 1]
3	In	Data 1 [Data 2]
4	In	Data 2 [Data 3]
5	In	Data 3 [Data 4]
6	In	Data 4 [Data 5]
7	In	Data 5 [Data 6]
8	In	Data 6 [Data 7]
9	In	Data 7 [Data 8]
10	Out	Acknowledge* [nAck]
11	Out	Busy [Busy]
12	Out	Paper Empty [PError]
13	Out	On-Line (Select) [Select]
14	In	Ignored [nAutoFd]
15	—	Not connected
16	—	0V DC
17	—	Chassis GND
18	—	+5V DC
19	—	Ground return
20	—	Ground return
21	—	Ground return
22	—	Ground return
23	—	Ground return
24	—	Ground return
25	—	Ground return
26	—	Ground return
27	—	Ground return
28	—	Ground return
29	—	Ground return
30	—	Ground return
31	In	Reset [nInit]
32	Out	Error*, returns error status if FRPO O2=2 [nFault]
33	—	—
34	—	Not connected
35	Out	Power Ready
36	In	Select In [NSelectIn]

[ ]: Signal names in the Nibble (high) mode (IEEE 1284). In the Nibble (high) mode, these signals are bi-directional.

Detailed descriptions of the signals follow.

Strobe* [nStrobe] (Pin 1)

A negative-going Strobe* pulse causes the printer to read and latch the data on the Data 0 [1] to Data 7 [8] signal lines.

Data 0 [1] to Data 7 [8] (Pins 2 to 9)

These eight signals form the data byte sent from the host computer to the printer. Data 7 [8] is the most significant bit.

Acknowledge* [nAck] (Pin 10)

This negative-going pulse acknowledges the previous character received by the printer. Acknowledge* pulses are sent only when Busy is low.

Busy [Busy] (Pin 11)

This signal is high when the printer is busy and low when it is able to accept more data. Every high-to-low transition is followed by an Acknowledge* pulse.

Paper Empty [PError] (Pin 12)

This signal goes high when the printer runs out of paper.

On-Line [Select] (Pin 13)

This signal is high when the printer is on-line and low when the printer is off-line. It goes low when the upper unit is raised, or when the **ON LINE** key is pressed to set the printer off-line.

☛ **The Paper Empty and On-Line signals are not used unless enabled by the FRPO command (O2 parameter).**

+5V DC (pin 18)

This line is connected to the printer's +5V DC line (+5V ±0.5V, 250 mA [Serial and Parallel total] maximum, fused.)

Reset [nInit] (Pin 31)

This signal is used in the standard Centronics interface to enable the computer to reset the printer.

Error* [nFault] (Pin 32)

When the high-speed parallel line control is on (FRPO O2=2), this line returns error status.

Auxiliary output 1 (Pin 33)

This signal line is not used.

Power Ready (Pin 35)

This signal is high when the printer's power is on.

Select In [NSelectIn] (Pin 36)

This signal is used in some versions of the Centronics interface to enable the computer to force the printer on-line. In high-speed mode, it is used as an interrupt.

C.2. RS-232C/RS-422A Interface

RS-232C interface

Interface Signals

The pins of the printer's RS-232C interface connector carry the signals listed in Table *C.2*. The table also indicates whether each signal is incoming or outgoing with respect to the printer.

Table C.2. RS-232C Signal Pin Assignments

Pin	In/out	Signal	Description
1	–	FG	Frame ground
2	Out	TXD	Transmit Data
3	In	RXD	Receive Data
4	Out	RTS	Request To Send
5	In	CTS	Clear To Send
6	In	DSR	Data Set Ready
7	–	SG	Signal Ground
20	Out	DTR	Data Terminal Ready

Brief descriptions of the signals follow.

FG - Frame Ground - (Pin 1)

This pin is connected directly to the printer frame.

TXD - Transmit Data - (Pin 2)

This output carries asynchronous data sent by the printer to the computer. It is used mainly in handshaking protocols.

RXD - Receive Data - (Pin 3)

This input carries serial asynchronous data sent by the computer to the printer.

RTS - Request To Send - (Pin 4)

This output is always held high (above 3 volts).

CTS - Clear To Send - (Pin 5)
DSR - Data Set Ready - (Pin 6)

Unused.

SG - Signal Ground - (Pin 7)

All signals can transmit between the printer and the host computer to send each signals with a signal ground.

DTR - Data Terminal Ready - (Pin 20)

This output is used as a buffer nearly-full handshake line. It is held high (above 3 volts) when the buffer can accept more data.

RS-232C Interface Voltage Levels

The voltage levels of the interface signals conform to EIA RS-232C specifications. SPACE is from 3 volts to 15 volts. MARK is from -3 volts to -15 volts. Voltages between -3 volts and 3 volts are undefined.

RS-422A interface

The serial interface of this printer was set to RS-232C mode before leaving the factory. However, by changing the jumper connector on the main circuit board, the interface can be changed to RS-422A mode.

In RS-232C mode, the printer can be connected to a personal computer (or similar device) equipped with an RS-232C serial interface. (The serial interface is set to RS-232C before leaving the factory.)

In RS-422A mode, the printer can be connected to a personal computer (or similar device) equipped with an RS-422A serial interface.

☛ **The changing of the main circuit board jumper connector should be carried out only by a Kyocera authorized dealer or Kyocera certified technician. Kyocera shall not be liable for damage due to improper changing of this main circuit board jumper connector.**

Removing the Main Circuit Board

☛ **The following instructions are intended for the technician only.**

Notes on Handling the Main Circuit Board

Protect the electronics by taking these precautions:

❒ Before touching the main circuit board, touch a water pipe or other large metal object to discharge yourself of static electricity. While doing the work, it is recommended that you wear an antistatic wrist strap.

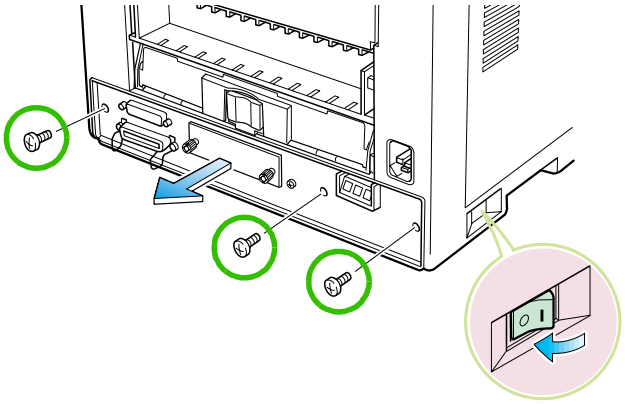
❒ Touch the main circuit board only by the edge.

Withdrawing the Main Circuit Board from the Printer

☛ **Be sure to remove the memory card first if inserted in the printer's memory card slot.**

Withdraw the main circuit board completely from the printer as follows:

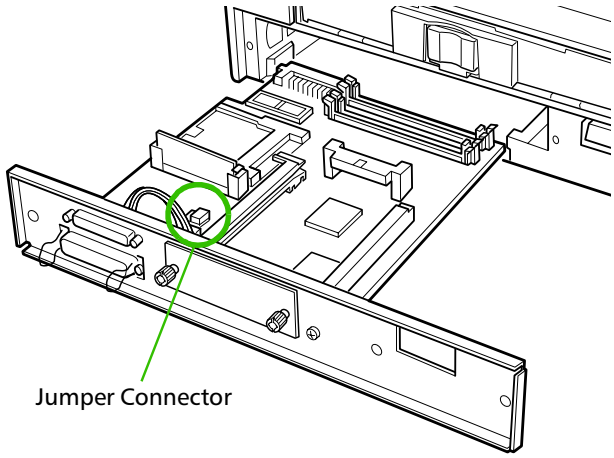
1. Turn the printer's power off. Unplug the printer's power cable and disconnect the printer from the host computer.
2. Remove the three screws from the printer's rear cover.



Power OFF (O)

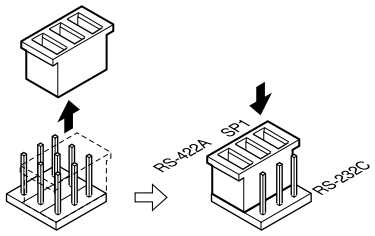
3. Pull the main circuit board all the way out of the printer.

☛ **Before pulling the main board out, clean an area on the table, etc., at the back of the printer's rear panel. Foreign objects, accidentally sticking to the back of the main board, can cause serious damage to the printer.**



Changing the Jumper Connector

1. Carefully remove the jumper connector from the main circuit board, and reconnect to the pin position shown in the diagram.



Jumper Connector

2. After completion of the above, return the main circuit board to the printer by reversing the procedure followed when removing it.

Verifying the Setting

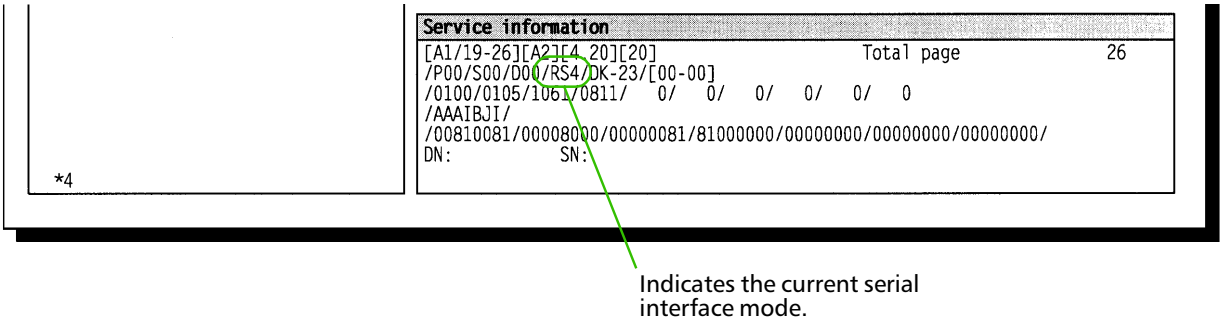
The procedure described below should be followed to verify that the RS-422A mode had been correctly set. Print the service status page to verify that the RS-422A mode has been correctly set.

1. Make sure the power switch is off. Plug the power cord into the printer and turn power on.

2. If the printer is on-line, select `>>Print Status page` in the Mode Select menu (refer to Mode Select Menu at the end of this document), and print the service status page.

3. Verify whether the setting is correct by checking the status printed at the bottom of the page. The following sample indicates that "RS-422A" is set "RS4". If "RS-232C" is set, "RS2" appears.

[Printer Status Page]



Interface Signals

The pins in the printer's RS-422A interface connector carry the signals listed in Table C.3.

Table C.3. RS-422A Signal Pin Assignments

Pin	In/out	Signal	Description
1	–	FG	Frame ground
3	In	RDA	Receive data Inverted
7	–	SG	Signal ground
9	Out	SDA	Send data Inverted
10	Out	SDB	Send data
18	In	RDB	Receive data

Overview of Signals (RS-422A)

FG - Frame Ground - (Pin 1)

This pin is connected directly to the printer frame.

SG - Signal Ground - (Pin 7)

All signals can transmit between the printer and the host computer to send each signals with a signal ground.

RDB - Receive Data - (Pin 18)
RDA - Receive Data Inverted - (Pin 3)

These pins carry asynchronous data sent from the computer to the printer. (differential input)

SDB - Send Data - (Pin 10)
SDA - Send Data Inverted - (Pin 9)

These pins carry asynchronous data sent from the printer to the computer. (differential output)

RS-422A interface voltage levels

The interface signal voltage levels conform with the EIA RS-422A standard. The differential voltage varies from 200 mV to 6V.

SERIAL Connector

The connector marked "**IOIOI**" (RS-232C/RS-422A) on the rear panel is a DB-25S connector. Use a DB-25P connector (or equivalent) for the connector on the cable.

C.3. RS-232C/RS-422A Protocol

A protocol is a set of rules the computer follows in sending data to the printer. The RS-232C/RS-422A parameters are stored in battery backed-up memory. They are indicated on the status printout. They can be changed by the FRPO (firmware reprogram) command described in the *Programming Manual*. The parameters and their identification codes are given below.

H1: Baud rate

Parameter value	Baud rate
12	1200
24	2400
48	4800
96	9600
19	19200
38	38400
57	57600
11	115200

The factory setting is 9600 baud.

H2: Data bits

7 or 8, factory-set to 8.

H3: Stop bits

1 or 2, factory-set to 1.

H4: Parity

Parameter value	Meaning
0	None
1	Odd
2	Even
3	Ignore

The factory setting is "None" (0 on the status printout).

H5: Protocol logic

Parameter value	Meaning
0	Combination of 1 and 3 below
1	DTR/DSR, positive logic
2	DTR/DSR, negative logic
3	XON/XOFF
4	ETX/ACK
5	XON/XOFF recognized only as protocol

The factory setting is 0.

H6: Buffer nearly-full threshold

This is a percentage from 0 to 99. The factory setting is 90.

H7: Buffer nearly-empty threshold

This is a percentage from 0 to 99. The factory setting is 70.

The factory settings of the buffer nearly-full and nearly-empty thresholds (H6 and H7) are subject to change without notification.

The gap between the nearly-full and nearly-empty thresholds allows the computer to send a fairly large amount of data in a continuous stream.

H8: Received-data buffer size

This is the size of the input buffer, specified in units of 10K bytes. The factory-set value is 6 meaning 60K bytes.

☛ **Since DTR/DSR protocol is not used with the RS-422A standard, select a parameter value other than 0, 1, or 2 for the H5 setting when using the RS-422A interface.**

PRESCRIBE 2e FRPO D0 command

The PRESCRIBE 2e FRPO D0 command is provided to allow manipulating XON/XOFF when an error has occured on the serial interface. The following table summarizes the error status corresponding to different D0 values.

		Serial interface error	
		error not handled	**error handled**
Timing of XON transfer to host while Ready or Waiting	XON sent every 3-5 seconds	D0 = 0 (default)	D0 = 1
	XON not sent	D0 = 10	D0 = 11

C.4. RS-232C Cable Connection

Preparing an RS-232C Cable

After obtaining an RS-232C cable, check that it is wired correctly, referring to the pin assignment table in *Appendix C*. If you have an IBM communication adapter cable type 1502067, you will have to resolder the wiring at the printer end of the cable. The procedure is as follows.

1. Unscrew the plastic cover from the printer end of the cable.
2. Next to each of the wires inside the cable is a bare shield wire. Solder all these shield wires together into a single bundle.
3. Using a section of flat wire about 3 mm wide and 15 mm long, connect the bundle of shield wires to the metal facing of the connector. Check that the solder connections are secure.
4. Desolder wires 2 and 3, then resolder them in crossed configuration. Solder wire 2 to pin 3 and wire 3 to pin 2. Cover the solder joints with thermofit tube.
5. Cut wires 4, 5, 6, and 20.
6. Solder wires 5 and 6 together and connect them to pin 20. Cover the solder joints with thermofit tube. Leave wire 4 unconnected.
7. Tape all remaining loose ends, or seal them with thermofit tube.
8. Screw the plastic cover back on.

Connecting the Printer to the Computer

1. Check that the power of both the printer and computer is switched off.
2. Discharge yourself by touching a metal object such as a doorknob.
3. Remove the plastic cap from the printer's RS-232C interface connector.
4. Plug the printer end of the RS-232C interface cable into the printer's RS-232C connector and screw it in place.
5. Plug the other end of the cable into the computer's RS-232C interface connector.
6. Switch on the printer's power.
7. The printer's RS-232C parameters are factory-set to the following values:

   Baud rate=9600 bps, Data bits (character length)=8 bits, Stop bits=1, Parity=None

   The two RS-232C protocols are XON/XOFF and DTR. The printer performs both of them simultaneously, using positive logic for DTR.

   If you are uncertain as to the printer's current parameter settings, you can reset them to the values listed above by following the manner described in the last page in this manual.
8. Set the computer to the same parameters as the printer. On many computers this can be done by setting DIP switches before power is turned on. Another method is as follows:

   In DOS, enter the following commands:

   ```
   C:\>MODE   COM1:96,N,8,1,P
   C:\>MODE   LPT1:=COM1
   ```

   To test the interface, then enter:

   ```
   CTRL   P
   C:\>DIR
   CTRL   P
   ```

   The software settings made by the procedures above are temporary. On most computers, permanent settings must be made with DIP switches.

   If you want to use a different baud rate or change any of the other RS-232C parameters, you can use the printer's FRPO (firmware reprogram) command. See the *Programming Manual* for details.

Index

A

Adhesive label *B-5*
Amorphous silicon drum *xii*
Automatic manual
    feeding *1-20*

B

Buzzer (Audio warning) *2-27*

C

Canceling Printing *2-7*
Cassette size *B-2*
Centronics *1-14*
Cleaning
    grid cleaner *4-1, 4-7*
    main charger unit *4-6*
    paper feed unit *4-8*
Contents of carton *1-4*
Control keys
    - key *2-5*
    + key *2-5*
    CANCEL key *2-5*
    CONTINUE key *2-5*
    ENTER key *2-5*
    EXIT key *2-5*
    FEED keys *2-5*
    FORM FEED key *2-5*
    MODE key *2-5*
    ON LINE key *2-5*
    STACK key *2-5*
    STATUS key *2-5*
Control panel
    control keys *2-5*
    INTERFACE indicator *2-2*
    message display *2-2*
    PAPER SIZE indicator *2-3*
    RESOLUTION
        indicator *2-2*
    symbolic indicators *2-4*
COPY indicator *2-3*

D

Developer unit *1-8*
Downloadable font *3-1*

E

Ecopower mode *2-22*
Ecoprint *xii*
    adjusting *2-25*
Ecoprint mode *2-25*
ECO-PRODUCT *xi*
Emulation *2-11*
Envelopes *B-6*
Error messages
    Battery error
        MEMORY CARD *5-10*
    Format error
        MEMORY CARD *5-10*
    I/F occupied *5-11*
    image fit *5-11*
    Insert the same
        MEMORY CARD *5-10*
    MEMORY CARD err
        Insert again *5-10*
    Memory overflow
        Press CONTINUE *5-1, 5-10*
    MEMORYCARD err ##
        Press CONTINUE *5-11*
    Print overrun
        Press ON LINE *5-10*
    Warning battery
        MEMORY CARD *5-10*
Expansion memory *1-23*
Extension cord *1-2*

F

Face-up output tray
    install *1-13*
Feed selection *2-6*
Font
    definition *3-1*
    identifying
        characteristics *3-1*
Form Feed Time Out *2-2*

G

Grid cleaner *4-1*

I

Indicators *5-7*
    ATTENTION *2-4, 5-7*
    DATA *2-4*
    ON LINE *2-4*
Installing the printer *1-1*
    basic requirements *1-2*
    clearance *1-1*
    location *1-1*
    place to avoid *1-1*
    power requirements *1-2*
Interfaces *1-14, 2-13*
Interior view *1-6*
Internal font *3-2*

K

KIR
    setting *2-24*
    test pattern page *5-1*
KIR 2
    levels *2-24*
Kyocera Digital Library CD *xiv*
    User's Manual *xiv*
Kyocera PrintMonitor
    xiii

M

Main circuit board *1-23, C-5*
Maintenance messages
    Add paper *5-8*
    Call service person En *5-9*
    Call service person Fn *5-9*
    Clean printer
        Press CONTINUE *5-8*
    Face-down tray paper
        full *5-8*
    Missing Waste-
        toner bottle *5-8*
    Paper feed unit Open *5-8*
    Paper jam *5-8, 5-12*
    Replace Toner
        Clean printer *5-8*
    Replace Waste-
        toner bottle *5-8*
    Side cover Open *5-8*

Toner low TK-20 Clean printer *5-4, 5-5, 5-8*
Top cover Open *5-8*
Warning Low memory *5-8*
Memory card *3-1*
Delete *2-16*
Format *2-17*
handling *1-22*
insert *1-22*
List of data names *2-17*
Partition *2-17*
Read fonts/data *2-15*
remove *1-22*
RWER command *2-16, 5-11*
Writing data *2-15*
Memory expansion
installing *1-23*
minimum memory requirements *1-23*
Message display *2-2*
Mode select menu *2-11*
MP tray *1-19*
cassette mode *1-21*
first mode *1-20*
paper guides *1-20*
protector bar *1-20*
selecting *1-19*
sub tray *1-19*

N

Names of parts
front view *1-5*
interior view *1-6*
rear view *1-6*
Net work *xiii*
Note on power *1-3*

O

OHP film *B-5*
On Line *2-7*
Optional interface *2-2*
Options *xiii*

P

Packing *1-3*
Paper *B-2*
adhesive label *B-5*
colored paper *B-6*
condition *B-2*
envelope *B-6*
grain *B-3*
OHP film *B-5*
preprinted paper *B-6*
recycled paper *B-6*
selection *B-1*
size *B-2*
special paper *B-4*
specifications *B-1*
thickness *B-3*
type *2-19*
weight *B-3*
Paper cassette *1-11*
clips *1-12*
paper limit *1-12*
Paper feed unit release lever *1-5, 4-8*
Paper Guide *1-11*
Paper jam *1-2, 5-12*
Paper Size Dial *1-11*
Paper Size Window *1-11*
Paper Stopper *1-12, 1-13*
Parallel interface *1-14, 2-2, 2-13, C-1*
bi-directional/high-speed *xii*
clips *1-14*
communication modes *C-1*
pin assignments *C-2*
transmission mode *2-11*
Partition *2-17*
PDF417 *xiii, xiv*
Plastic bag *4-2*
Please wait *2-2*
Power cord *1-14*
Power requirement *1-2*
Power switch *2-6*
PRESCRIBE 2e command *xiv, 2-5, 5-6*
FRPO D0 command *C-9*
FRPO I0 command *2-15*
RWER command *2-17*
Print density *2-26*
Print quality *5-3*
Printer
Specification *A-1*
Printer driver *1-16*
Processing *2-2*
Protocol *C-8*

R

RAM DISK *2-14*
Ready *2-2*
Ready indicator *2-6*
Recycled paper *B-6*
Registration roller *4-8*
Resolution *2-2*
Resource protection *2-26*
RS-232C *1-6, 2-2, C-4*
cable *C-9*
pin assignments *C-4*
RS-232C/422A *C-9*
RS-422A *1-6, 2-2, C-5*
jumper connector *C-6*
pin assignments *C-7*

S

Self test *2-2*
Serial interface *1-14, 2-2, C-4*
PRESCRIBE 2e FRPO D0 command *C-9*
protocol *C-8*
RS-232C mode *C-5*
RS-422A mode *C-5*
Service Status page *C-6*
Set up *1-7*
Setup
emulation *1-15*
face-up output tray *1-13*
interface *1-14*
paper *1-11*
paper cassette *1-11*
paper stopper *1-13*
power cord *1-14*
printer driver *1-16*
status page printing *1-15*
toner container *1-8*
SIMM
installing *1-25*
removing *1-26*
sockets *1-24*
test *1-26*
Simple Network Management Protocol (SNMP) *xiii*
Sleep mode *xii, 2-22*
Please wait *2-22*
Sleeping *2-22*
Sleep timer *2-22*
Sleeping *2-2*
Soft fonts *3-1*
Stack selection *2-6*
Status page
printing *2-8, 5-1*
status page *1-15*

T

Temperature and humidity *1-2*
TK-20/TK-20H *4-1*
Toner container *4-2*
dispose *4-2*

installing *1-8*
life *4-1*
release lever *4-2*
replacement *4-1*
sealing strip *1-8, 4-2*
Toner kit *4-1*
Top cover *1-8, 1-9*
Troubleshooting
error messages *5-10*
guidelines *5-1*
indicators *5-7*
interface *5-2*
maintenance messages *5-8*
quality problem *5-3*
Two-dimensional bar code
(PDF417) *xiii*
Typeface *3-1*

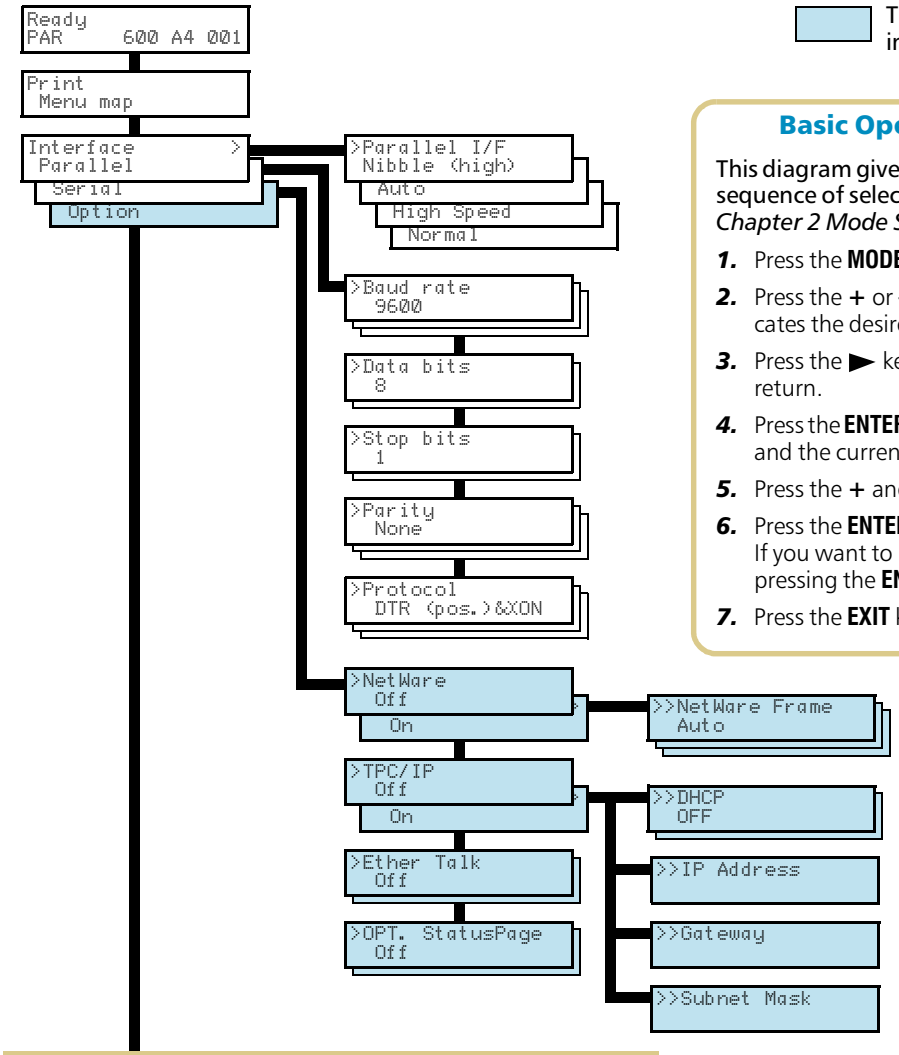
U

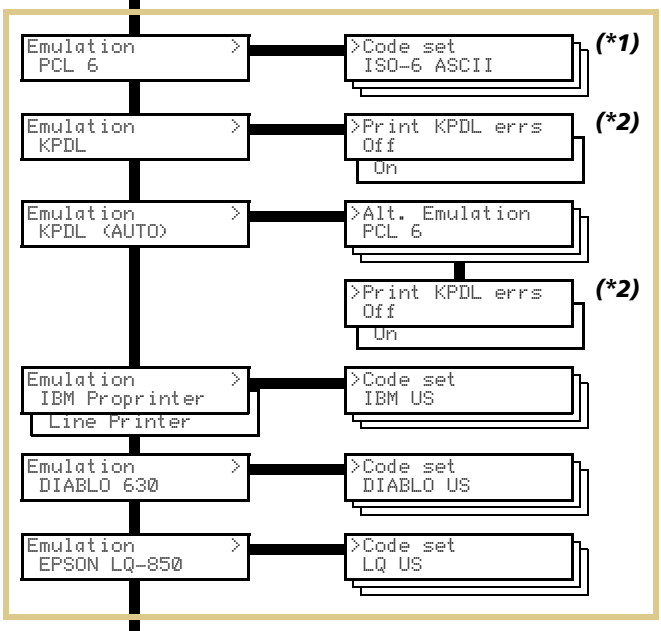
User's Manual *xiv*

W

Waiting *2-2*
Waste toner bottle *1-9*
Windows *1-16*
Wiper cloth *4-8*

Mode Select Menu





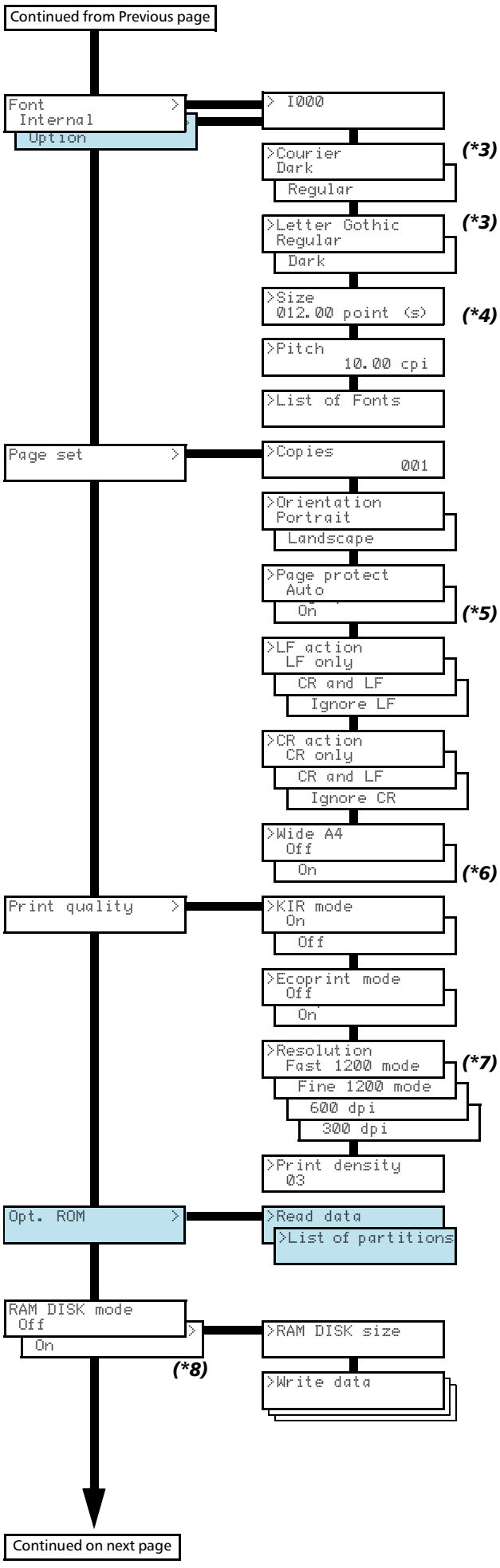
Continued on next page

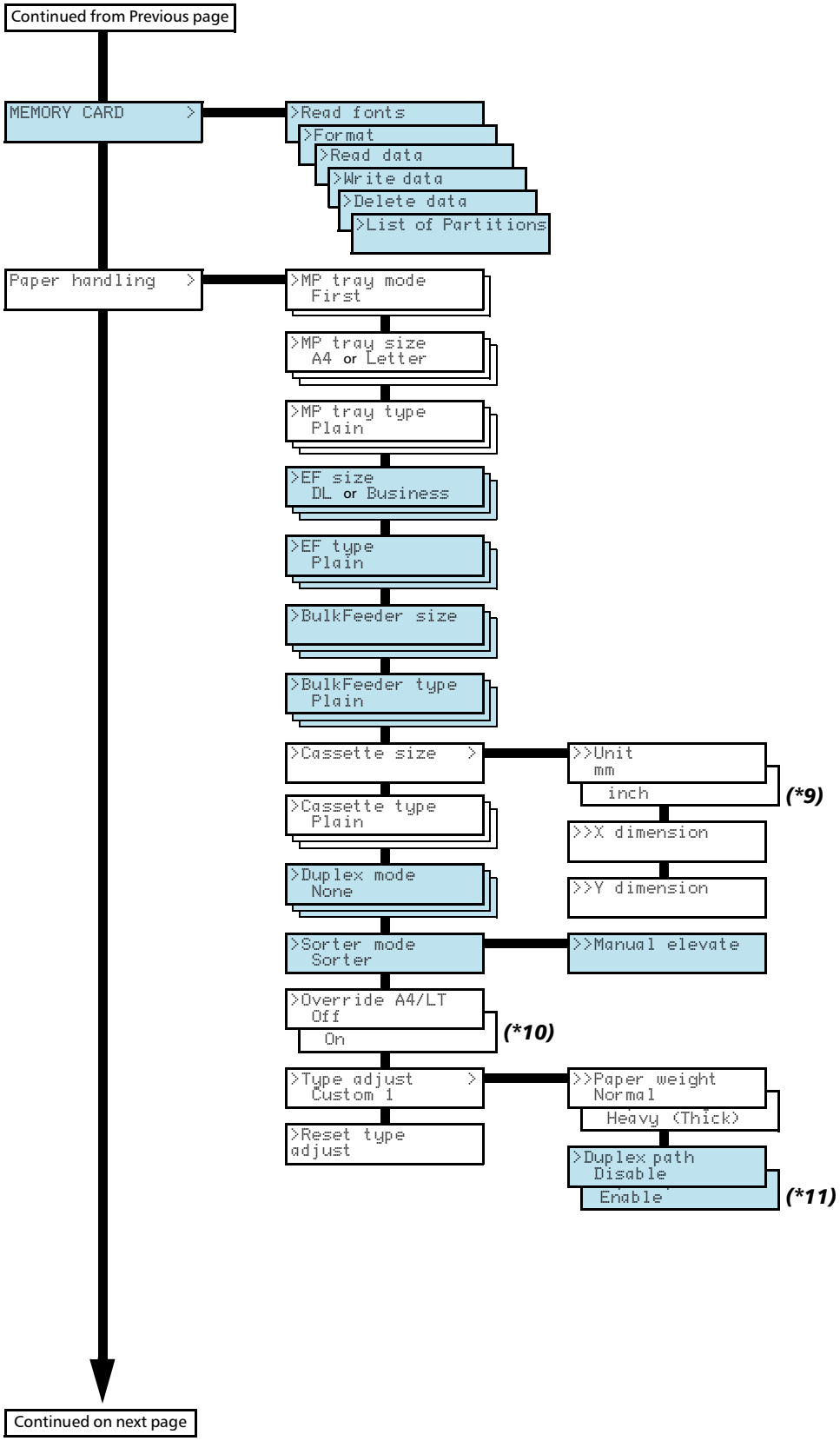
These items willl not show unless the printer is installed with the applicable option unit/kit.

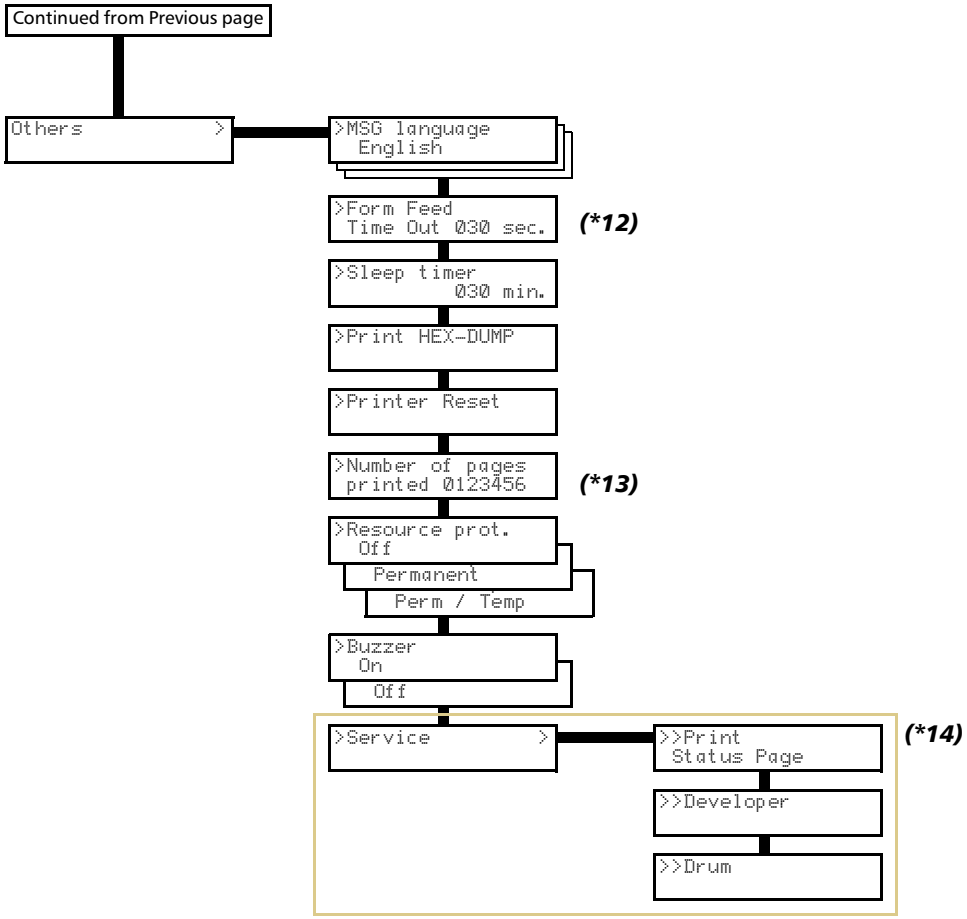
Basic Operations During Mode Selection

This diagram gives quick reference to all menu options and their sequence of selection. Use this description in combination with *Chapter 2 Mode Selection Menu*.

1. Press the **MODE** key to enter Mode Selction mode.
2. Press the **+** or **–** key repeatedly until the message display indicates the desired item.
3. Press the ► key to move to a submenu. Press the ◄ key to return.
4. Press the **ENTER** key once the desired menu appears. ? will flash, and the current setting can be changed.
5. Press the **+** and **–** key to select the desired setting.
6. Press the **ENTER** key.
   If you want to re-enter a setting, press the **CANCEL** key before pressing the **ENTER** key.
7. Press the **EXIT** key. This will enable currently selected settings.


Continued from Previous page
Font
Internal
Option
> I000
>Courier
Dark
Regular
(*3)
>Letter Gothic
Regular
Dark
(*3)
>Size
012.00 point (s)
(*4)
>Pitch
10.00 cpi
>List of Fonts
Page set
>Copies
001
>Orientation
Portrait
Landscape
>Page protect
Auto
On
(*5)
>LF action
LF only
CR and LF
Ignore LF
>CR action
CR only
CR and LF
Ignore CR
>Wide A4
Off
On
(*6)
Print quality
>KIR mode
On
Off
>Ecoprint mode
Off
On
>Resolution
Fast 1200 mode
(*7)
Fine 1200 mode
600 dpi
300 dpi
>Print density
03
Opt. ROM
>Read data
>List of partitions
RAM DISK mode
Off
On
(*8)
>RAM DISK size
>Write data
Continued on next page


Continued from Previous page
MEMORY CARD >
>Read fonts
>Format
>Read data
>Write data
>Delete data
>List of Partitions
Paper handling >
>MP tray mode
First
>MP tray size
A4 or Letter
>MP tray type
Plain
>EF size
DL or Business
>EF type
Plain
>BulkFeeder size
>BulkFeeder type
Plain
>Cassette size >
>>Unit
mm
inch
(*9)
>>X dimension
>>Y dimension
>Cassette type
Plain
>Duplex mode
None
>Sorter mode
Sorter
>>Manual elevate
>Override A4/LT
Off
On
(*10)
>Type adjust >
Custom 1
>>Paper weight
Normal
Heavy (Thick)
>Duplex path
Disable
Enable
(*11)
>Reset type
adjust
Continued on next page



***1:** Depending on the emulation selected, the following set >Code sets are available.

***2:** The printer can be set to print error data during KPDL emulation. If this is set to On, error data will be printed if trouble occurs during printing. This is set to Off before leaving the factory.

***3:** You can select either Courier or Letter Gothic. Any font can be selected as Dark or Regular. These fonts are displayed when the Font menu is Internal.

***4:** The >Size menu is not available for the Courier and Letter-Gothic fonts. The >Pitch menu is displayed instead for these fixed width fonts.

***5:** Although Auto is the default setting and this menu does not usually appear, page protection mode will be forcibly set to on if a Print overrun Press CONTINUE error occurs due to insufficient printer memory. Be sure to return this setting to Auto in order to maintain high printer memory efficiency.

***6:** Turning this to ON increases the maximum number of characters that can be printed in a line for an A4 page (78 characters at 10 pitch) and likewise increases the maximum per line on Letter size paper (80 characters at 10 pitch).(Only PCL 6 emulation)

***7:** This sets the resolution for printing. For 1200 dpi there are two modes. In Fast 1200 mode, printing is equal to 1200 dpi (1200 dpi horizontal × 600 dpi vertical) comparatively, Fine 1200 mode is slower, but in Fine 1200 mode true1200 dpi printing is facilitated. The printing is slower than Fast mode but the print quality is better.

***8:** This is displayed only after the FS-1750 memory has been expanded. (The total must be 12 MB or more)

***9:** This is displayed when the size dial on the paper cassette is set to Custom. (See section *2.7. Setting Custom Sizes*.)

***10:** This sets whether to enable or disable the difference between A4 size and letter size. Under the default setting of Off, the paper size of the paper source is matched to the paper size given for the data, and if these differ a corresponding error message is displayed. When this is set to On, printing is performed even if the actual paper size differs from the paper size given for the data.

***11:** This menu is displayed only when Custom # is selected.

***12:** After the printer accepts all data and there is no more data from the computer, the printer will wait a set amount of time without printing the final page. Once this preset amount of time has elapsed, the printer will automatically issue a form feed. This timeout setting can be set in 5-second increments up to 495 seconds.

***13:** This is the total number of pages printed by the printer up to the present time.

***14:** These menus are for service personnel.
They should not be operated by the user.